The Mining Journal

RAILWAY AND COMMERCIAL GAZETTE.

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

No. 738.---Vol. XIX.] LONDON, SATURDAY, OCTOBER 13, 1849. [Price 6d.

Stannaries of Cornwall—In the Vice-Warden's Court.

BICKFORD AND OTHERS *v.* RICHARDS.

IN RE TRENOW CONSOLS MINE.

THE REGISTRAR'S FIRST REPORT having been CONFIRMED, Notice is hereby given, that a DIVIDEND, under the Decree of this Court, will be PAID to the CREDITORS of the said MINE, whose debts have been allowed by the said Registrar, on Wednesday, the 17th day of October inst., at the Registrar's Office, Truro, between the hours of Ten and Two o'clock, when and where the several creditors are requested to come and receive the same. 1

Dated Registrar's Office, Truro, October 10, 1849.

DUDLEY, WORCESTERSHIRE.

IMPORTANT AND EXTENSIVE SALE OF STEAM-ENGINES, RAILWAY PLANT, CARTS, HARNESS, &c.

TO ENGINEERS, RAILWAY CONTRACTORS, BUILDERS, COLLIERY OWNERS, &c,

MR. G. O. BROWN begs to inform his numerous friends, that he is selected by the executors of the late Joel Buxton, Esq., to offer for unreserved COMPETITION, BY AUCTION, at DUDLEY, on the Oxford, Worcester, and Wolverhampton Railway, on Monday, the 15th of October, and three following days, their truly valuable and extensive stock of 2

RAILWAY PLANT,

COMPRISING FOUR STEAM-ENGINES, &c. &c.—viz.:

1 8-horse portable (Gough's patent) high-pressure engine complete; 1 4-horse portable (Gough's patent) high-pressure engine complete, and one extra tubular boiler; 1 14-horse high-pressure horizontal engine, with boiler, &c., complete; 1 16-horse high-pressure beam engine, but without a boiler.

1 new fly-wheel, weight about 3 tons; 1 other fly-wheel, from 12 to 15 cwts.; 2 4-inch metal engine-pumps, with sundry metal pipe; 2 6-inch metal engine pumps, with sundry lengths of pipe; 2 metal hand pumps; and 1 horse pump with horse gear and machinery complete.

A large quantity of MINE and PIT MACHINERY, such as winding, drawing, and head gear, 30 small trollies with wheel, axles, &c., complete; 10 large pit top or landing trollies with wheels, axles, &c., complete; 40 wrought iron and wood skips, a large quantity of pit chains, pit tools, in great variety, such as drills, drifts, bars, picks, fire grates, oil lamps, &c., &c.

10,000 sleepers, 7 feet long, suitable for collieries.

20,000 lineal feet of 3 by 9-inch, and 3 by 11-inch planks.

5,000 cube feet of Memel, elm, and other timber.

A large quantity of short balk ends, and other timber, all of which will be sold in lots to suit purchasers.

100 24-yard earth waggons, in excellent working condition; 100 wheelbarrows; 9 one and two-horse carts; 1 pair of timber cutts; 12 three-wheeled carts.

1 excellent dog cart; one screw press (on a carriage) for strengthening rails.

200 tons of flat bottomed rails, from 35 to 45 lbs. per yard.

60 tons of scrap iron and scrap metal, 10 tons of bolts and nuts, from 4 to 18 inches long.

2 hearths of smiths' tools, comprising bellows, anvils, vice, tongs, hammers, swages, &c.

Several sets of loose wheels and axles (new). All the building materials, stable fittings, and fixtures, included in the stables, workshops, &c. in the yard.

20 sets of cart and thriller harness, together with numerous other effects, too varied to be particularised.

The ENGINES will BE SOLD on TUESDAY, at One o'clock.

Dudley possesses most excellent facilities for water or land carriage, being close to the canal in communication with all parts of the kingdom, and is distant 10 miles from Birmingham, 6 miles from Wolverhampton, and 5 miles from Stourbridge.

The sale will commence each day at Ten o'clock, and the goods will be divided into such lots as will suit customers.—Masbro', September 25, 1849.

WHITWELL COLLIERY.

MR. W. I. BARKER will PEREMPTORILY SELL, BY AUCTION, on Tuesday, October 16, 1849, at Twelve o'clock at noon, for One precisely, at the George Inn, Pilgrim-street, NEWCASTLE-UPON-TYNE, 3

THIRTY-EIGHT (64ths) SHARES

(late of Messrs. Andrew White and Richard White) of and in the well-known current-going and most excellent colliery, called the WHITWELL COLLIERY, situate at WHITWELL, in the county of DURHAM, comprising a royalty of upwards of 635 acres, or thereabouts, of coal of first-rate quality, there being two seams opened out—the Hutton Seam and Low Main Seam, worked by two pits, and with pitmen's houses, workshops, engines, machinery, and all necessary stock and conveniences for carrying on the colliery on an extensive scale.

The colliery is situate adjoining to and communicating with the main line of the York, Newcastle, and Berwick Railway (the Durham and Sunderland Branch whereof is constructed to the bank head), and the coal can be shipped either at the ports of Sunderland or Hartlepool, or on the River Tyne. The convenient situation, high reputation of the coal, and many other advantages of this colliery, afford an excellent opportunity for any one desirous of an investment in a colliery, and the purchaser of these shares will be entitled to the acting direction and management of the undertaking.

The colliery may be viewed on application to Mr. Robson, Whitwell Grange, near Durham; and further particulars known on application to Messrs. J. J. and G. W. Wright, solicitors, Sunderland.—Sunderland, August 30, 1849.

WEST OF SCOTLAND MALLEABLE IRON-WORKS, AND LANDS OF BRAIDHURST AND MILTON.

TO BE SOLD, BY PUBLIC ROUP, within the Royal Exchange Sale Rooms, Glasgow, on Wednesday, the 24th day of October, 1849, at One o'clock afternoon, 4

MALLEABLE IRON-WORKS.

These large WORKS, belonging to the West of Scotland Malleable Iron Company, situated at MOTHERWELL, in the parish of Dalziel, and county of Lanark, with a little farther outlay capable of producing about 600 tons of finished iron weekly.

Upset Price, £40,000.

LANDS OF BRAIDHURST AND MILTON.

These LANDS contain, including the feued ground, about THREE HUNDRED and NINETY ACRES, and will be SOLD with the MINERALS therein.

Upset Price, £35,000.

All as fully described in former Advertisements.

For farther particulars, application may be made to James Anderson, at the company's office, 38, St. Vincent-street; or to Moncrieff, Paterson, and Forbes, 45, West George-street, Glasgow, in whose hands are the title deeds and articles of roup, and plans of the property.—Glasgow, Sept. 26, 1849.

NORTH WALES.—VALUABLE SLATE QUARRIES FOR SALE.—TO BE SOLD, BY PRIVATE CONTRACT, those VALUABLE QUARRIES, called the CAMBRIAN SLATE QUARRIES, situate in the neighbourhood of FESTINIOG, in the county of Merioneth. They have for some time been in full operation, and producing a material of first-rate quality, at a comparatively trifling cost, being in the side of a mountain, water free, and not having more than from 10 to 12 feet "baring."—The above property is well worth the attention of capitalists, both from its position and capability of producing, at a slight additional outlay, an almost unlimited quantity of slates.—For particulars apply to 5

Mr. MICHAEL FORSTER, Mining Engineer, Conway, North Wales.

N.B.—These quarries are sufficiently opened out to develope both the quality of the slates and the capability of the extension of the works.

Conway, October 2, 1849.

TO BE DISPOSED OF, the MANUFACTURING PREMISES, BUSINESS, and CONNECTION (which is of a first-rate character), of a well established MACHINERY GREASE MAKER. 6

Also, some SHARES in LEAD MINES in NORTH WALES—the remainder being held by a most respectable proprietary.

Also, several PATENT RIGHTS, FREEHOLD ESTATES, LEASES of FOUNDRIES and ENGINEERING WORKS, FREESTONE QUARRY, and COAL and IRONSTONE MINES; SHARES in a well-known SLATE QUARRY, the PART, or the WHOLE, of a well-established GAS WORK, & STEAM-ENGINES and MACHINERY of all descriptions.

For particulars apply to James Boydell, land, mine, and machinery valuer, and agent, No. 54, Threadneedle-street, London.

VALUABLE AND EXTENSIVE MINES, OF COAL AND IRONSTONE.

TO BE LET, ON LEASE, on most advantageous terms, the COAL and IRONSTONE under a very large tract of land, in the parish of RUABON in the county of DENBIGH, adjoining the Shrewsbury and Chester Railway. 7

The proprietors of the ESTATES on which the Ponkey and Aberderfyn Iron-Works were formerly carried on, have made arrangements TO LET BOTH PROPERTIES TOGETHER, which will give the lessee of them facilities to carry on a lucrative business—very rarely to be met with.

The COALS and IRONSTONE on these ESTATES may be raised at very much less than an average cost, and the quantity proved in them (besides what are under a very large portion of one of them, in which there is no doubt they will be found) is estimated will supply iron-works with materials to make 400 tons of pig-iron weekly for upwards of 30 years, as well as 50,000 tons of the much and justly-celebrated Yard and Wall and Bench Coals per annum for sale, for the same period.

Printed particulars of the property, and lithographed plans of the estates, showing the minerals under them, with calculations as to the expense of making iron from them, as compared with that of manufacturing it in Staffordshire, may be had upon application at the office of the *Mining Journal*, 26, Fleet-street; and at J. Boydell's, 54, Threadneedle-street, London; and at Messrs. Longerville and Williams, solicitors, Oswestry.

Oswestry, June 6, 1849.

ASSAYING AND ANALYSIS.—Mr. MITCHELL begs to inform the MANAGERS, &c., of MINES, SMELTING-WORKS, and MANUFACTORIES, that he still continues to CONDUCT ASSAYS and ANALYSES of all PRODUCTS, metallurgical and manufacturing, at his LABORATORY, 8

23, *HAWLEY-ROAD, KENTISH TOWN, LONDON,*

to which address communications are to be forwarded.—Instruction in all branches of assaying and analysis as usual.

CHURWELL COLLIERY, NEAR LEEDS.—TO COALMASTERS, ENGINEERS, AND OTHERS.—TO BE SOLD, BY PRIVATE CONTRACT, the MATERIALS and IMPLEMENTS, now being out of use, at CHURWELL COLLIERY, consisting of 1 12-horse HIGH-PRESSURE ENGINE, 15-horse BOILER, grate bars, fire hole door and bearers, with strong geering for winding coal and pumping water; 1 6-horse CONDENSING WINDING ENGINE, with boiler, complete; 1 2-horse engine and foundation stone, about 10 tons of tram rails and twines, 12 to 14 tons of (4 feet) rails, chairs, and turn-points for a waggon-road or inclined plane, 12 feet gin (nearly new), over-tree standards and strings, corf weighing machine, pit head gear, palleys, carriage frame and carriages, 1 pair of strong spur-wheels, 5 ft. diameter, and a number of smaller spur and bevel wheels, about 10,000 fire-bricks, being square, wedge quarries and lumps, a quantity of various kinds of iron-work, five carts, horse gearing, and other articles, which may be viewed, and other information obtained, on application to Mr. William Dible, at the colliery. 9

Churwell Colliery, October 8, 1849.

COAL MINES IN PEMBROKESHIRE.—TO BE LET, for a term of years, all the valuable VEINS of COAL lying under the FARM of CRESWELL, of about 350 acres, and comprising the best VEINS of ANTHRACITE COAL in the county. The above colliery has only been partially worked in the shallow veins many years back, before steam-power had come into general use, and is so situated that it can be opened at a small outlay, being on a branch of the Milford Haven Railway, with quays, coal yards, &c., already constructed, and a pit sunk within half a mile of the shipping place will command the whole of the property.—"A railroad, at a very easy incline, may be made at a comparatively small expense." 10

For further particulars apply to Mr. James Wilson, mineral surveyor and agent, Underwood, near Haverfordwest.

ASTURIAN MINING COMPANY.—Notice is hereby given, that at a Special General Meeting of this company, held at the company's offices, on the 25th day of September inst., it was resolved,—That Messrs. ROBERT MOORE, MICHAEL FORRISTALL, and JAMES SCOTT, appointed as Liquidators, at the Special General Meeting of the 25th day of August last, do ACT as LIQUIDATORS, in conjunction with the board of directors, and that their appointment be, and is now, confirmed.

That, by virtue of the said nomination, the board of directors of this company, in conjunction with the said Messrs. Robert Moore, Michael Forristall, and James Scott, constitute the Committee of Liquidating Administrators, pursuant to the statutes of the company and the commercial code of Spain. 11

And that John Joseph Kelly, Esq., British Vice-Consul at Gijon, and Mr. George Lambley, the company's agent in the Asturias, are nominated the agents of the said administrators in Spain.

K. MACKENZIE, Secretary.

Offices of the Company, 9, Austinfriars, London, Sept. 28, 1849.

ASTURIAN MINING COMPANY.—The Board of Directors and Committee of Liquidation hereby give Notice, that they have made a further CALL of TWO POUNDS, or 200 reals vellon, per share upon the shares held in the capital stock of the company, and that such call is PAYABLE, for holders of Spanish shares, at the bank of Messrs. H. O'Shea and Co., Madrid; and for all other shares, at the London and County Bank, Lombard-street, London, on the 10th day of November next. That shareholders who shall pay one-half of the said call on or before the said 10th day of November, will be allowed one month for the payment of the other half of the said call: 5 per cent. discount will be allowed on pre-payment. 12

K. MACKENZIE, Secretary.

Offices of the Company, 9, Austinfriars, London, Sept. 28, 1849.

DUISBURG IRON-WORKS AND MINES, *IN WESTPHALIA, CLOSE TO THE RHINE.*

Managed in England according to the principles of the "Cost-book System," and in Prussia as a *Société in Commandite*, under laws limiting the liability of the shareholders to their personal subscription. 13

Company's Offices, 28, Moorgate-street, City.

CAMBRIAN IRON FOUNDRY, ENGINE AND BOILER MANUFACTORY, *NEWPORT, MONMOUTHSHIRE.* 14

ESTIMATES GIVEN for GAS and WATER-WORKS, RAILWAY, BRIDGE, and OTHER CONTRACTS, to any extent. THOMAS EDWARDS, Proprietor.

October 1, 1849.

CWMBRAIN PATENT IRON REFINERY.—The PROPRIETORS of IRON FORGES and MILLS are respectfully INVITED to MAKE TRIAL of Mr. BLEWITT'S REFINED IRON, or METAL, PREPARED by a

NEW PATENT PROCESS,

whereby the IRON is completely FREED from the IMPURITIES CONTRACTED in the BLAST-FURNACE, and, by judicious mixtures, rendered applicable to every kind of manufacture. Heretofore, the metal usually sold in the market has been produced from he worst pigs, scraps, and refuse of some particular blast-furnace, or set of furnaces, without any mixture, or any regard to quality, or the purpose for which it might be required. The PATENT METAL is PREPARED ON SYSTEM, and TO ORDER, for any of the following purposes:— 15

1. For BOILER and TANK-PLATES.
2. For TIN-PLATES, commonly called COKE-PLATES.
3. For STRONG CABLE BOLTS, RIVET, and ANGLE IRON.
4. This COMPOUND PUDDLED, beat under the hammer into a bloom, reheated, and rolled into a 6 or 6½-inch bar, makes TOPS and BOTTOMS for FLANCH and OTHER RAILS, of very superior quality, and attended with less waste than any other kind of iron used for that purpose. It is also well adapted for nail-rods, horse-shoes, and for other ordinary uses of the blacksmith.

The PATENT METAL is marked with a squirrel, and the initials "R. J. B.," and is to be had only at the "Cwmbrain Iron-Works," near Newport, Monmouthshire.

TOUGHENED CAST-IRON—STIRLING'S PATENT.

No. 1—For SMALL and MEDIUM CASTINGS.

No. 3—For HEAVY CASTINGS. 16

No. 3 *(Extra)*—For ROLLS, HEAVY SHAFTS, and VERY HEAVY CASTINGS.

The above is by far the strongest Cast-Iron made, and is now being extensively used where strong castings are required.

Further particulars may be obtained on application to

Messrs. GARDEN & MACANDREW,

27, Queen-street, Cheapside, from whom also the IRON can be PROCURED.

STRUVE'S PATENT MINE VENTILATOR. Cost—£150. 17

TO COLLIERY PROPRIETORS.

Quantity of air passed through a Mine almost unlimited, to the extent of 200,000 cubic feet per minute, if necessary—depending on size of apparatus.

COST of an APPARATUS to produce a ventilation of 20,000 cubic feet per minute, ONE HUNDRED and FIFTY POUNDS, exclusive of patent right. This amount of ventilation would be sufficient for a mine working 150 tons per day, provided it was not very fiery; in which case it would be desirable to provide for 30,000 cubic feet of air per minute. The capabilities of the Ventilator may be doubled at any future time, at a comparatively small cost.

The Ventilator has been at work for upwards of six months at the Eaglesbush Colliery, near Neath, working under a rarefaction of 2½ to 3 inches of water, which demonstrates the impracticability of furnace ventilation, when the shafts are shallow and the airways small.—It is practical to rarify a mine by this ventilator to the extent of 2 feet of water, or 2 inches of mercury.

LICENSES will be GRANTED on application to

Mr. WILLIAM PRICE STRUVE, Swansea,

Civil Engineer and Mineral Surveyor.

WARRANTED SAFETY FUSE.—W. BRUNTON & CO. beg to inform Mine Agents, Contractors, and Merchants, that having completed their Machinery for the MANUFACTURE of the ABOVE ARTICLE, they are enabled to offer FUSE of a very superior quality, and at considerably reduced prices.

W. B. & Co. can SUPPLY FUSE in ANY LENGTHS that may be required.

Penhellick Fuse Factory, Pool, Truro, Cornwall. 18

TESTIMONIALS.

We, the undersigned, hereby bear our testimony to the excellence of the Safety Fuse, manufactured by Messrs. Brunton and Co. We have had it in use in our mines; and, after sufficient trial, find it to be fully equal to any Fuse we have ever used:—

Carn Brea Mine.
R. H. Pike Purser.
John Leuten, James Miners, John Vivian, John James, } Agents.

North Pool Agents.
James Evans.
John Nancarrow.
Frederic Evans.

South Roskear Agents.
John Dunkin.
William Thomas.

Cook's Kitchen Agents.
Joseph Vivian.
Richard Bennetts.

Cook's Kitchen Agents.
John Ivey.
William Hitchens.

North Roskear Agents.
Joseph Vivian.
William Michell.
William Thomas.

Tincroft Agents.
Peter Floyd.
Thomas Stainsby.
Thomas Lean.
Henry Hocken.
Richard Martin.

William Nancarrow.
Alex. Eudey, Joseph Eudey, } *Wheal Agar Agents.*

LOANS ON DEBENTURES.—The CALEDONIAN RAILWAY COMPANY are prepared to RECEIVE TENDERS OF LOANS, in sums not less than £500.—Applications to be made or addressed to this office. 19

By order,

135, George-street, Edinburgh, May 30, 1849. D. RANKINE, Treasurer.

BANK OF AUSTRALASIA (Incorporated by Royal Charter, 1835), 8, Austinfriars.—The Court of Directors GRANT BILLS and LETTERS of CREDIT on the undermentioned branches—viz.: Sydney, Maitland, Melbourne, Geelong, Hobart Town, Launceston, and Adelaide, on terms which may be learned on application, either at their offices, 8, Austinfriars, or at their bankers', Messrs. Smith, Payne, and Smiths. By order of the board, WILLIAM MILLIKEN, Sec. 20

TO RAILWAY DIRECTORS, ENGINEERS, AND MERCHANTS.—EDWARD ELWALL JONES, RAIL and CHAIR INSPECTOR, begs to inform the above Gentlemen that he has had several years practical experience in the MANUFACTURE of RAILWAY IRON.—RAILS and CHAIRS inspected, and a guarantee will be given, if required, for orders entrusted under his inspection or superintendence, that the same shall be manufactured according to specifications. 21

No. 47, MARSHES-ROAD, NEWPORT, MONMOUTHSHIRE.

IRON CRANES.—FOR SALE, SEVERAL IRON WHARF CRANES, capable of lifting 3 tons each. These Cranes are of the most modern construction, and were manufactured by the most eminent crane-makers in Britain.

May be seen, and prices and particulars given, on application to Mr. ALEX. REID, Monument Chambers, 14, Fish-street-hill, City.

*** CRANES, of any description or size, MADE TO ORDER. 22

TO BE SOLD, BY PRIVATE CONTRACT, a LEASE, for 21 years, of a LEAD MINE, in CARNARVONSHIRE, within 1½ mile of a shipping port.—Every information may be had by applying (by letter, post-paid) to 23

THOMAS RICHARDSON, South Penrallt, Carnarvon.

STEAM-ENGINE FOR SALE.—TO BE SOLD, BY PRIVATE CONTRACT, an 85-inch cylinder STEAM-ENGINE, 10-feet stroke, equal beam.—Application to be made to Messrs. Hocking and Loam, engineers, Redruth. 24

THE OWNER of a WELL-ESTABLISHED COLLIERY, in the County of YORK, which it is necessary to extend, to meet an increasing demand, wishes to DISPOSE OF A PART to some one willing to engage, and who commands an adequate capital. The COLLIERY is in good working order, and possesses a communication with the inland counties and the coast, both by railway and navigation. Particulars will be given to respectable applicants, from whom references will be required.

Apply, under cover, to "S. J.," care of the Editor of the *Mining Journal*, 26, Fleet-street, London 25

WANTED (for a Mine near Callington) to PURCHASE or HIRE, a good SECOND-HAND PUMPING ENGINE, not less than 30-inch.—If a suitable one can be offered on reasonable terms, letters to be addressed to the undersigned, JAMES CROFTS, 26

No. 4, King-street, Cheapside, London.

SPARE MATERIALS FOR SALE.—FOR SALE, BY PRIVATE CONTRACT, at HOLMBUSH MINE, in the parish of STOKE CLIMSLAND, a 50-inch cylinder STEAM-ENGINE, with BOILER, about 12 tons, in excellent condition, with 108 fathoms of PITWORK, consisting of 3 11-inch plunger-lifts, all complete, together with shears, capstan, capstan-rope, &c.

Application to be made to the directors of the above mine, 8, George-yard, Lombard-street, London; or to Capt. William Lean, Holmbush Mine, Stoke Climsland.

Dated October 6, 1849. 27

MINES ABOUT TO BE ABANDONED.—Mr. C. S. RICHARDSON will be happy to TREAT with a COMPANY on whose Mine they have an ENGINE, of any size, up to 40-inch cylinder, with stamps, pumps, and other materials: he is willing to purchase the whole or part.—Address, stating full particulars, to the office, 15, Old Broad-street, London. 28

WANTED TO PURCHASE—SHARES in South Frances, North Roskear, Trelawny, Trehane, South Basset, Devon Great Consols, Treviskey, Tincroft, Bedford, Stray Park and Camborne Vean, East Buller, and Cook's Kitchen Mines.—Apply to Messrs. WATSON & QUEL, 29

Mining Offices, 1, St. Michael-alley, Cornhill, London.

N.B.—Messrs. W. & C. are always in a position to treat for the Sale or Purchase of Shares in all the best dividend Mines in Cornwall, Devon, and Wales.

MINING PROPERTY.—Mr. JAMES HERRON, MINE AGENT, 33, CLEMENTS-LANE, LOMBARD-STREET, has received instructions to DISPOSE of SHARES in FIRST CLASS MINES, paying regular dividends, and yielding to the purchaser from 17½ to 25 per cent. upon his outlay. He is also in a position to transact business in the following—viz. Stray Park, Treviskey, Tincroft, Trelawny, Treleigh, West Caradon, East Wheal Rose, Lewis, East Pool, East Crowndale, Condurrow, Bedford, Holmbush, North Pool, South Basset, South Wheal Frances, & North Roskear.

Foreign Mines.—United Mexican, Alten, St. John del Rey, Imperial Brazilian, Copiapo, and National Brazilian. 30

MR. T. A. READWIN, MINING OFFICES, *2, WINCHESTER-BUILDINGS, OLD BROAD-STREET, LONDON.* 31

MR. HENRY VATCHER, MINING AND RAILWAY SHAREBROKER, EXETER.

Competent and experienced AGENTS provided to INSPECT MINES, at the shortest notice. 32

MR. R. TRIPP, MINING AGENT and SHAREBROKER, *BEDFORD CHAMBERS, BAMPFYLDE-STREET, EXETER.* 33

JAMES LANE, MINING SHARE DEALER, *80, OLD BROAD-STREET, LONDON.* 34

MR. GEORGE BATE, Jun., CIVIL ENGINEER AND SURVEYOR, *WOLVERHAMPTON.*

Offices in Queen-street, corner of Piper's-row.

N.B.—UNDERGROUND MINING SURVEYS accurately executed. 35

ANGLO-MEXICAN MINING ASSOCIATION.—Notice is hereby given, that the affairs of the Association for Assisting in Working the Mines of Mexico and other Parts of Spanish America being in course of liquidation, a DIVIDEND of TEN SHILLINGS per share will be PAID to the registered shareholders on and after the 16th day of October inst.—The certificates are required to be left at the office three clear days for examination. ALFRED GODFREY, Secretary. 36

5, Broad-street-buildings, London, October 10, 1849.

CALLINGTON MINES COMPANY.

Salvador House, London, October 10, 1849.

At a Quarterly General Meeting of Shareholders in this company, held this day, the following resolutions were passed unanimously:— 37

That the cordial thanks of the meeting be presented to the directors, and especially to Mr. P. N. Johnson, for their anxious and able management of the company's property.

That the reports and accounts now submitted be received and adopted, and entered on the company's cost and transfer books.

TAMAR SILVER-LEAD MINING COMPANY.

Salvador House, London, October 11, 1849.

At an Annual General Meeting of shareholders in this company, held this day, the following resolutions were passed unanimously:— 38

That the reports and accounts now read be received, adopted, and entered in the company's minutes.

That a special and cordial vote of thanks be presented to Mr. P. N. Johnson, for his skilful and valuable attention to the interest of the proprietors, as also for the complaisance with which he has elucidated the state and prospects of the company.

That the best thanks of this meeting are most deservedly due to the chairman and directors for their excellent and able management of the valuable and lucrative property of the company.

TINCROFT MINING COMPANY—TWELFTH DIVIDEND.—Notice is hereby given, that a DIVIDEND of SEVEN SHILLINGS per share, being 5 per cent. upon the paid-up capital of this company, will be PAID on Wednesday, the 31st inst., and succeeding Wednesdays, between the hours of Twelve and Three.—The certificates are required to be left at the office two clear days, in order to be examined and marked.—Salvador House, October 4, 1849. 39

MELLING'S IMPROVED DOUBLE SASH WINDOW. IMPORTANT TO LUNATIC ASYLUMS, PRISONS, HOSPITALS, COTTAGES, FARM BUILDINGS, &c.

These PATENTED SASHES are raised and lowered without sash cords and weights, and are so arranged that any width of opening can be secured for free ventilation, without the possibility of giving width sufficient for escape. They are exceedingly simple—not liable to get out of order, and most admirably adapted for public establishments. 40

For further particulars apply to Mr. Thos. Melling, Rainhill Iron-Works, near Liverpool; or Mr. William Wheelhouse, agent, 97, Lord-street, Liverpool.

SEA, FIRE, AND LIFE ASSURANCE SOCIETY.—I beg to certify, that the INSERTION of MY NAME, as ONE of the MEDICAL OFFICERS of this SOCIETY, and of which Mr. Augustus Collingridge is managing director, &c., and Mr. Alfred Burt the actuary, is wholly UNAUTHORISED, and in CONTRAVENTION of my EXPRESS ORDER, addressed to the manager. 41

MATTHEW FRENCH WAGSTAFFE.

October 11, 1849. Walcot-place, West Lambeth.

Transactions of the Royal Geological Society of Cornwall.

ON STRATA IN THE PARISH OF STOKE-CLIMSLAND, CONTAINING VEGETABLE FOSSIL, by Mr. J. R. PATTISON; read by Dr. WILLAN.—In this paper, the author describes the presence of some fossil plants in a quarry of coarse flagstones, at the curve round the hill, on the turnpike-road leading from Launceston to Callington, and about four miles from the latter place. The fossils consist of fragments of calamities, and some other reed-like stems, similar to impressions on the dark carboniferous shales of North Devon. The whole of the beds are assigned to the overlying carboniferous series, and are more southerly than has hitherto been noted in Cornwall. A specimen of the fossil plants accompanied the paper.

NOTICE OF THE OCCURRENCE OF BRAZILIAN GOLD IN A CALCAREO-SILICEOUS MATRIX, by Mr. WM. JORY HENWOOD, F.R.S., F.G.S., member of the society; read by Mr. S. PIDWELL.—An interesting paper. After a section of the strata at Gongo Soco, the author briefly describes a calcareo-siliceous stratum, which is overlaid by the jacotinga (iron and manganese) formation; and in which small quantities of gold have been found. This is the first time in which Brazilian gold has been found in a calcareous rock. The publication of the details are reserved until Mr. Henwood can present the results of his observations and conclusions relative to the Brazilian gold formations in a connected form.

ON THE ICTHYOLITES OF EAST CORNWALL, by Mr. WILLIAM PENGELLY, of Torquay; read by Mr. J. N. R. MILLETT.—In this paper, the author states that a few years since, having learned that Messrs. Couch and Peach had discovered icthyolites in the slate rocks at and near Polperro, he took the earliest opportunity of visiting these gentlemen, who very kindly afforded him all the information he desired, and allowed him to study the specimens they had obtained. Being thus prepared, Mr. Pengelly investigated the slates of Devon and Cornwall, commencing at Talland Sand Bay (the point at which Mr. Peach's labours eastward terminated), and worked eastward. Mr. Pengelly had the occasional assistance of Mr. Giles, of Liskeard, and Mr. Hicks, of East Looe, and the rocks had been minutely examined—but the author did not mean to intimate that his lynx-eyed friend, Mr. Peach, would fail to discover fossils where he (Mr. Pengelly) had found none. The author then describes the result of his labours. Icthyolites had been found, as well as quartz and masses of greenstone, with slates of blue and chocolate colour—the blue slate containing a quantity of calcareous matter, and the red oxide of iron, which character continued to near the coast-guard station, west of the Rame-head, where the search terminated. The author intends to continue his investigation, and promises to forward the result to the annual meetings of this society.

ADDITIONS TO CORNISH GEOLOGY, by Mr. C. W. PEACH, of Fowey.—He commenced by regretting that he was unable, from want of time, to give anything new connected with the Western run of the fish beds of the S.E. coast. He stated that he had confirmed, by the discovery of good specimens, the breadth of these beds from 1½ miles, to 2½ miles, of their extension in an easterly direction, to beyond Port Wrinkle, under the Rame-head. These were observed by Messrs. Pengelly, Giles, and Hicks, (the latter is also a shoemaker!) and he (Mr. Peach) expressed his opinion that they crossed Plymouth Sound. He dwelt on the pleasure occasioned by finding the Asterolepis in Cornish rocks, the characteristic fossil so delightfully described by Mr. Hugh Miller, in his new work, the *Footprints of the Creator*, and strongly recommended this work. He gave a list of his discoveries in the other fossiliferous strata on the coast west, and of his finding Trilobites, &c., at Pridmont; also of a series of heaves in trap dykes near that spot, and especially dwelt on some interesting runs of rocks east, and of the splendid fossils he had met with in them. He left the description of the El Dorado of Trilobitic beds he had found in Menheniot, and the fossiliferous beds near Liskeard, to Mr. Giles, who resided on the spot. He presented to the society a series of splendid polished Porphynes, and a number of beautiful fossils from Newquay, sent by J. T. Treffry, Esq., of Place, Fowey, and expressed himself greatly indebted to that gentleman for taking him to Newquay, where he found a splendid Trilobite, and the spine of a fish, &c., and stated the interesting fact of fish remains being *now* met with on the North coast. His delight was great in seeing new and worthy labourers in his favourite walk, and in the prospect of the presence of eminent geologists, to settle the age of our rocks.

ON THE FOSSILIFEROUS ROCKS OF THE LISKEARD DISTRICT, by Mr. JOHN GILES, of Liskeard.—The writer stated that only one or two general notices of the geological characteristics of the neighbourhood of Liskeard had been submitted to any public society, and those had been the result of only a cursory survey of some of the phenomena there developed, and were intended merely to indicate the fossiliferous character of the district. This being the case, he thought a more minute examination of some of the most interesting localities desirable. He then gave a lucid description of the Roseland quarry, shewing that the lower beds of it are non-fossiliferous up to where a calcarious band occurs, which he represented as a peat form, crowded with organic forms of great interest, including Trilobites, Orthocerites, Bellerophons, Turbinolica, Pleurodictya, Problematicu, Crinoiden, and many other forms. A suit of fossils, illustrative of the disposition of the facets of the eyes, and the form of the articulations of the lobes of the Trilobites, together with the other organisms noticed, accompanied the paper. He described all the fossils exhumed from this locality, and deduced conclusions respecting the deposition of the beds in which they are found embedded, and then called attention to Stoney-bridge, which he concluded to be a run of the same strata. Several facts were stated, which induced him to arrive at this conclusion, and also that a very remarkable flexine of the beds is exposed there, presenting the appearance of a cylinder, partly buried in the rock, and that the beds, inferior to those containing organisms, differed from the flags of Roseland, a circumstance which might arise from local causes. He then traced the beds as far as Doublebois, a distance of some miles. When he directed attention to another class of beds, occurring at Trevelmond, which he called a continuation of the Bodmin clay-slates, and proved his statement from a similarity of lithological and organic peculiarities. We were then conducted south-eastward, over beds of clay slates of a monotonous and comparatively uninteresting character, extending across the parish of Liskeard, in a southerly and south-easterly direction to Polgaver cross, near Bindown, where they end, succeeded by a stratum richly fossiliferous, which he supposed to represent the fossils of East Looe; but those organisms, although so very abundant as to mainly constitute the rock, are in so friable a condition, that very few specimens can be obtained.—This paper of Mr. Giles appeared to afford a very great pleasure, and the author sat down amidst the warm plaudits of the whole assembly.—*Penzance Journal.*

WICKLOW GOLD MINE.—On the slopes of Croaghan Kinshela is passed the celebrated Wicklow gold mine, "our Lagenian Mine," as Moore has it:—

"Where sparkles of golden splendour
All over the surface shine;
But if in pursuit we go deeper,
Allured by the gleam that shone.
Ah! false as the dream of the sleeper,
Like love, the bright ore is gone."

This is nearly true now, but there was a time when it was regarded in a very different light. There had for some years been a vague report current that gold had been found in this neighbourhood; when, in the year 1796, a piece of gold, in weight about half an ounce, was found by a man crossing the Ballinvalley stream, the report of which discovery operated so powerfully upon the minds of the peasantry, that every employment was forsaken, the benefits of agriculture abandoned, and the fortunes of Aladdin, or Ali Baba, were the great originals they hoped to imitate. "Such infatuation," continues our author, "called for the interference of Government; and accordingly a part of the Kildare militia were stationed on the banks of the rivulet, to intercept the works and break the illusion;"—which, by the way, seems rather an Irish method of employing soldiers. They might occupy the "diggings," and intercept the works, but think of a regiment being ordered to "break the illusion!" However, the illusion was broken somehow. The same writer says, that "during the short space of two months, spent by these inexperienced miners in examining and washing the sands of the Ballinvalley stream, it is supposed that 2666 (which is a mighty nice calculation) ounces of pure gold were found, which sold for about 10,000*l.*" Having driven off the gold-finders, the Government undertook to open mines; and the works were carried on till 1798, when all the machinery was destroyed by the insurgents. The works were renewed in 1801; but being found not sufficiently productive to repay the expenses, were eventually discontinued. "The quantity of gold found while the stream-works were under the management of Government, appears to have been inferior to that collected by the peasantry, amounting to the value of 3675*l.* 7s. 11½*d.*" (*Wright: Scenes in Ireland,*) Evidently, the Government workers, with all their machinery, were very unlucky, or Croaghan's stock of gold was soon exhausted; or, perhaps there was some mistake in counting up the 2666 ounces. It is mentioned in Curry's *Handbook of Ireland*, that "a London company had been engaged in streaming for gold, as it is termed, for these two years past.....but the results were not such as to induce them to proceed." A few labourers, it is added, continued to be employed by them without any regular superintendence; "a fixed sum being paid for whatever gold they may find." Even this casual searching is now discontinued; but there yet prevails a lingering belief among the peasantry, that there is still gold in Kinshela, and only the "lucky man" is wanting. Many an anxious look, we doubt not, is turned on the brook when it has been "roarin' in spate" but we fear, as one of the peasantry of whom we had been asking some questions oddly said, "it will never touch California."—*The Land we Live In.*

THE PATENT FIRE ANNIHILATOR.

In the *Mining Journal* of the 29th Sept. we gave an account of some interesting experiments, which were conducted by Mr. Phillips, the patentee of the new fire annihilator, at the establishment of the London Gas Company, Vauxhall, affording convincing proof that, while water is useless when a fire in a building has obtained a hold, except in saturating surrounding materials, and thus preventing its spread, the vapours generated by this apparatus are perfect non-supporters of combustion, and that no fire can exist for one minute after the atmosphere surrounding it has been charged by their application. The alarming fire in London-wall, on Saturday night last, and the approach of winter, when calamities of this kind are of more frequent occurrence, has again called our attention to the subject; and, convinced as we are of the soundness of the principle, and the perfect success which must attend its use, we shall be most happy if our remarks tend, in the smallest degree, to promote its general adoption. As regards the large and destructive fire above alluded to, had one of the largest hand annihilators been in requisition in the neighbourhood at the first outbreak, the destructive element would have been subdued in the first instance, and the large amount of property supposed to be destroyed saved; while even when the building was in one mass of flame, had the firemen been supplied with some of the annihilators of the more powerful sizes, the fire would have been got under in from 5 to 10 minutes, instead of requiring the exertions of a number of men for 30 or 40 hours in deluging the remains of the property with water, and thus utterly spoiling what probably had escaped burning. It is a remarkable, and one of the most advantageous features of the invention next to its annihilating powers, that as instantaneously as it extinguishes fire, so immediately does it create a perfectly wholesome atmosphere for inhalation, and the most delicate fabrics which might escape the flames are uninjured by the vapours generated. We would, therefore, suggest to the board of directors of insurance companies managing the fire brigade department, to Mr. Braidwood, the superintendent, and to country insurance companies, whether it would not be advisable to give the new extinguishing apparatus a fair trial. We know how prone human nature is to hang to old associations, and how difficult it is to introduce new modes of action to the exclusion of the old; but in this age of improvement and scientific advancement the public look to public men to carry out new discoveries, which promise to be productive of general benefit; and in this instance nothing could be more easy, or devoid of any inconvenience, and, at the same time, without involving an expense worth naming, when the prospective benefit is considered, than for the firemen, when called out with their engines, to be provided with some of the largest of the hand annihilators, and thus give them a fair trial. Should they not prove of the advantage represented, the operators would be provided with the element usually employed—water; but should they turn out to be generally effective, as we expect they will be, it must, on consideration, be perceived what a vast amount of annual loss would be prevented to the companies and to the public; while the safety to human life would, doubtless, form a large item connected with their introduction. During Mr. Phillips's lectures, to which we have adverted, he described to the audience the natural phenomena which first suggested to his mind the idea of applying vapours to the extinguishing of fire in buildings. It appears that, many years since, he was on board an English man-of-war, cruising in the Mediterranean, when one of those extraordinary phenomena occurred, which few have had an opportunity of witnessing—the formation of an island from the depths of the ocean by volcanic agency. After the consolidation of land above the water, where the sea was 80 fms. deep, to an extent of six miles in diameter, the volcanic action continued with extraordinary impetus, notwithstanding an enormous chasm was open on one side the island, into which the waters flowed in foaming torrents, and were as instantly ejected, in combination with red-hot cinders and flames of fire, to a perpendicular height of probably three miles. At this awful moment the vessel, about two miles distant, was gradually drifting, at a slow but certain rate, with the current, directly into this vast fiery opening, and the consternation and despair of all on board may be better fancied than described. All was given up for lost, when suddenly the eruption ceased, a vast body of vapour escaped from the crater, and a current of wind springing up from the island, bore the apparently doomed vessel away in safety. From this perilous adventure, Mr. Phillips was struck with the idea which formed the basis of his present invention. He considered that water, *per se*, had evidently no extinguishing effect on the flame, or even on the source from whence it arose; but as soon as a sufficient quantity of vapour had formed in the fiery depths to cut off all connection with the atmosphere, and thus prevent access of oxygen to support combustion, instantly the flames were checked, the very foundation of the fire annihilated, and the island alone remained to show the extraordinary outbreak to which Nature had been subjected. Having thus embodied the idea, the next difficulty was the construction of an apparatus which should instantaneously be available, and which should be certain in operation, and this has been most completely effected. The charge in the machine is a chemical compound of a highly combustible nature, but only when fired by chemical means. It then gives out a most intense heat, sufficient instantly to vapourise the water contained in the case, and which, mixing with its own vapours, forms the gaseous compound, in which no fire can exist. Although thus a strictly chemical operation, it is so arranged that the most uninlightened, or even a mere child, can perform the action required with ease and safety, it being merely pressing down a peg in the top of the outer case. This peg breaks a capsule containing sulphuric acid, which, dropping into a tube containing chlorate of potash and lump sugar, mixed in the form of a powder, the charge above noticed is instantly put in a state of combustion, and the effects mentioned are the result. We understand that the public generally are becoming alive to the safety of having one of the annihilators in their houses, as offering such simple yet certain means of stopping the ravages of fire when in embryo; and no theatre, bank, or other public establishment, gentlemen's country mansions, where, from their isolated position, fires are generally so fatal, nor ships at sea, should be without one or more of these life and property saving machines. We are informed that preparations are being made, by the erection of a much larger building than the one on which the experiments were made on the 28th Sept., for proving its capabilities on a more magnificent and practical scale, and on such exposition being made, we shall again return to the subject, believing it to be a really valuable invention, and of great public importance.

THE ELECTRIC TELEGRAPH IN PRUSSIA AND BELGIUM.—At a time when the Prussian Government, with most laudable zeal for the improvement of communications, has established and opened for public use its telegraphic lines over a vast extent of country, and this also when still vibrating under the shock of political convulsions—it is a matter of profound surprise that Belgium should not only have remained behind, but that she should have shown no inclination to accept advantageous propositions offered to her by Prussia, should she be disposed to take up the telegraphic line from the Prussian frontier, and prolong it to Brussels, and thence to the frontier of France and to Ostend. Belgium, thanks to the efforts of M. Rogier, gave a worthy example to other continental nations in the establishment of railways; it is matter of surprise, therefore that this intelligent minister should not have exhibited equal readiness, if not in forestalling, at least in combining with the Prussian Government, in carrying out this admirable sister invention, which has rendered the conveyance of thought equal in rapidity to its emanation, and swift almost as the passage of light. If Belgium has not done this—if there be an interruption to telegraphic communication at the point most essential—the fault must not be ascribed to the Prussian Government, or to the able Belgian diplomatist at the head of the Belgic-Berlin mission. We are able to state that offers were made to the Belgian, by the Berlin Government, of a most advantageous nature, whilst the work was yet in its infancy, and that every facility and guarantee would have been accorded which could have insured the convenience and benefit of the contracting and profiting parties. We know also that the propositions made by Prussia were regarded as so advantageous, prospectively, not only to the Governments and public of both countries, but to more distant Governments and publics, that M. Nothomb backed up the propositions with zeal and judicious argument. It is now possible that Belgium may find herself compelled, or at all events induced, to end where she ought to have commenced; but it is questionable whether she will be able to obtain the same advantageous terms from Prussia that were first proposed, and whether the public will not consequently suffer, not only from delay, but from augmented expense.—*Chron.*

LIABILITIES OF RAILWAY COMPANIES.—A passenger on the Eastern Counties has just recovered a sum of 12s. 4d. from the company, for not running their trains in conformity with their official time tables, which the court held were in the nature of a public contract. The Midland Company have had to pay the value of 18 baskets of herrings, sent from Yarmouth, on Friday, and which, it was contended, were spoiled, they not being delivered in Leicester till the following Monday. The defence was, that the company were not bound to deliver them on Sunday.

THE "COST-BOOK SYSTEM"—ITS PRINCIPLES & PRACTICE.

During the past four years, our columns have teemed with remarks and explanations on the real meaning to be conveyed by a statement that a mine was carried on under the "Cost-book System," with numerous proceedings in the law courts bearing on the same subject; and, in many instances, to the best of our ability, we have endeavoured minutely to define what really is the true basis of the system, how its several regulations are established, and how they should be enforced. As, however, notwithstanding our attempts to render clear and intelligible this evidently misunderstood and misinterpreted mode of conducting a mining adventure, we are almost daily receiving communications of inquiry on various details connected with it; we have, therefore, collated the general information published in our columns; and, by an entire revision and re-arrangement, we trust the present article will prove a certain and instructive reference to all who may at any time be at a loss in comprehending any of the details of at least the general principles on which the system is based. The "Cost-book System" of conducting the affairs of mines, probably originated in Cornwall, has certainly prevailed there for centuries; and a main part of the business of the equity side of the Court of the Vice-Warden of the Stannaries, consists in enforcing its rules and usages. In this Court, judicial decisions have been given on many of the most important legal questions arising out of mining adventures, and illustrating the customs of the county. The system implies, that when a number of persons have determined to form a company for working a mine, they meet; and in a book, called the "cost-book," enter their names for the shares they intend to hold. They then decide what works shall be carried on, appoint mining agents to conduct the necessary operations, and the most important officer ("the purser"), whose duties are to keep the "cost-book," and there enter the accounts of the mine, collect the amount due from shareholders, pay costs, &c.; and, in fact, this officer is supposed to represent the whole body of shareholders. The costs attending the adventure are fairly entered in the same book as they arise; and at stated intervals, usually every two months, the adventurers meet to audit the accounts, and transact other necessary business. If there is a profit, a dividend is either declared or the balance carried to the next account; if a loss, a further call is made sufficient to cover it, and proceed with the working; or, if considered desirable, the mine is abandoned, materials valued and sold, liabilities discharged, and surplus, if any, divided. In a mining adventure, properly carried on under the Cost-book System, any shareholder may, on giving notice, and paying his proportion of liability at the time, relinquish his shares, when he is entitled to his fair proportion of the value of the materials; and no adventurer need ever be ignorant of the financial state of the mine—all liabilities being settled at every two-monthly meeting. When thus conducted, the purser of a mine is enabled, by the laws of the Stannaries, to sue any adventurer, whether resident in or out of Cornwall, for his proportion of the costs, audited and signed by the adventurers at one of their meetings, by a petition to the Vice-Warden. This petition, when the defaulter resides in Cornwall, is served on him personally; and when he resides out of the jurisdiction, the service is effected by affixing copies of the petition and summons which accompanies it to the door of the account-house, or other conspicious place, on the mine; and petitions of this kind are amongst the most numerous of the suits on the equity side of the Court. In commencing to work a mine on the Cost-book System, the rules and regulations should be first entered in the cost-book, somewhat of the following character, which are similar to those of the first mines in Cornwall; of course, any variations in detail may be made, according as may be agreed at the meeting of adventurers:

"This mine is hereby declared to be divided into equal parts, or shares, and held respectively by the several parties whose names are subscribed hereunto.

"The system of management, and mode of carrying on the operations of the mine, and all matters attendant thereon, shall be enforced and carried out under the system generally known as the Cost-book System, and referred to in the Act Victoria 7 and 8, cap. 110, clause 63, subject to the following, and any other special minutes, or regulations, that may hereafter be made for the internal government of the affairs of the mine, not inconsistent with the general management under the Cost-book System.

"1. That the accounts be made up monthly, and be discharged by the purser, or agent employed for that purpose, who shall enter, or cause to be entered, the monthly cost-sheet, in a book to be kept for that purpose, to be denominated the 'cost-book,' which this book is understood to be.

"2. That a meeting of the adventurers shall be held at the mine, or at some convenient place, to be appointed from time to time, at least once in every two months, when the accounts of the preceding two months, with the balance, and all matters appertaining to the financial affairs of the company, shall be submitted, and minutes of the same entered into the cost-book, and signed by the respective adventurers present. That a list of shareholders, or adventurers, shall also be prepared, and entered in the cost-book, at such several meetings, and a statement submitted of the arrears, if any, of calls previously made.

"3. That at all such meetings, upon the inspection and approval of the accounts and vouchers, the adventurers present shall have full power to make any call, or calls, which may be necessary for the prosecution of the mine, so that the amount so called does not exceed the sum estimated for the cost of the succeeding two months, in addition to paying off any engagements, or liabilities, which may at the time exist, and may declare a dividend, or division, of any surplus profit which may arise from working the mine.

"4. That at all such meetings, the adventurers present shall have full power to appoint or remove any agent, or agents, and to determine the rate of payment for services rendered.

"5. That all meetings shall be called by circular, addressed, by post, to the several shareholders, or adventurers, giving, at least, seven days' notice of the intended meeting; and that the same be signed by the purser, or his representative, or such party as the adventurers shall from time to time appoint.

"6. That at the meetings so held, the adventurers shall, if they think fit, appoint from time to time a committee of the adventurers, to superintend the management of the affairs of the mine, and to communicate with the purser, captain, or other agent, on the subject thereof; but the powers of such committee shall not extend beyond the period of two months, although the members of such committee will be eligible to be re-elected, or may be removed, and other persons appointed in their room.

"7. That any meeting may adjourn from time to time, as may be deemed expedient; but that it be imperative on the purser, or other agent, duly appointed, to convene a meeting, at least once in every two months.

"8. That at all meetings such adventurers shall have one vote in respect of every single share held by him; and in respect of which all calls then due shall have been paid up, and that a majority of votes of those present in person, or by proxy, be binding on the adventurers, whether present or absent.

"9. That absent adventurers be entitled to vote by proxy—they deputing their powers to a co-adventurer; but that it shall be understood the proxy be confined to the specific meeting named, unless otherwise directly expressed.

"10. That all transfers, or assignments, of shares be entered in the cost-book, and signed by the respective parties; but in case of a transfer made by a separate paper, or instructions given to the purser, or other agent, by letter, such letter must bear the post-mark on the sheet authorising the transfer, and not be enclosed in an envelope—and the original transfer shall be deposited with the purser, or other agent, and be by him entered in the cost-book.

"11. That the captain, or resident agent, make a report on the operations at the mine, at least once a fortnight, or more frequently, if deemed desirable, and that such report be open at all times to the inspection of the adventurers, on application to the purser, or other appointed agent.

"12. That a purser be appointed, into whose hands the moneys collected by calls on shares, and arising from sales of ores, and otherwise, shall be paid.

"13. That a copy of the resolutions and abstract of accounts shall be transmitted to every adventurer, within seven days after the meeting shall have been held.

"14. That if any call remain unpaid for the space of 14 days after the time fixed for the payment of the same, the share in respect whereof it is due may, at any subsequent meeting of the adventurers, be declared to be forfeited absolutely, such meeting having been convened by circular, stating the object of such meeting.

"15. That any adventurer shall be at liberty to withdraw from the undertaking, on giving notice to the purser of such intention, and paying up his proportion of costs and liabilities; and, further, that he be entitled to his like proportion of ores, machinery, cash in hand, &c., up to the period of such surrender of his interest in the mine.

"16. That the purser shall, when required by adventurers holding 50 shares in the undertaking, convene a special general meeting, for such purposes as may be stated in the requisition—the same being mentioned in the notice calling the meeting, and due notice given accordingly."

A mine conducted under such regulations, and divided into a certain number of shares, represents an equal number of votes. Every share represents one vote; and thus property is equally represented. Resolutions are not carried at meetings by show of hands, but by the number of shares; thus avoiding the possibility of the minority coercing the majority, and establishing the most fair and equal mode of conducting the management of property. While it would be superfluous to notice any one case, particularly among the many mines in prosperous working under the Cost-book System, we will select one case of a mine which did not become profitable so soon as some of the adventurers expected, showing the advantages which accrued even in the breaking up of an undertaking. The St. Austell Consols Mine was commenced about 1844, and conducted strictly in accordance with the Cost-book Principle, and held out the most promising and favourable indications. After continuous and extensive working without success, the mine was suspended; and a portion of the adventurers wishing to relinquish, the remainder consented; and measures were immediately taken to ascertain the amount of assets and liabilities. The position of the company was thus at once ascertained; and instead of liabilities being suffered to run on and increase, harassing actions by merchants against individuals for payment of stores commenced, a general breaking up of the concern taking place, and want of confidence engendered, the business was all smoothly arranged, and a proportion became payable to the relinquishers of 7s. or 8s. per share. In case of a shareholder disposing of all or any part of his shares, he signs a notice to the purser that he has sold such shares to A. B., of ———, and who signs such notice, accepting such shares upon the same terms as the seller held them. It is then his duty to enter the name of the purchaser in the cost-book, and certify the same to the purchaser by letter, when the liability of the seller immediately ceases to the extent of the shares so sold. It having been decided that the transfer requires no stamp, the purser supplies a printed form for the purpose. He also makes out a correct list of the shareholders, to lay before the adventurers at every two-monthly or other periodical meeting. In the case of Reynolds *v.* Basset, it was decided that no transfer could be legal unless the same was registered in the cost-book, and that the entry in the cost-book constitutes a complete transfer; and in the case of Ricketts and others *v.* Bennett and another, the judge observed, that "the Cost-book Principle was distinguishable from other trading concerns, or partnerships, so that no shareholder could pledge the credit of another shareholder;" thus clearly showing that there are no liabilities beyond the amount of shares respectively held by each shareholder up to the time of transfer; while the moment he transfers his shares, his liabilities cease—that this principle gives to each shareholder a vote in the direction of the affairs of the company at each of their meetings—and that the shareholders are not at all subject to the laws of common partnerships, or the Joint-Stock Companies' Acts.

As this case was of considerable importance, as showing how far the Cost-book System differs from the laws of common partnership, it will be well briefly to refer to it. It appeared that Mr. Robinson, the purser of Wheal Providence Mine, drew sums from the Truro Bank to the amount of 3668*l.*, some portions of which he applied to the payment of dividends, although no profit had been made, and the remainder to his own use. The bankers, unable to obtain payment, sued the plaintiffs (two of the adventurers); but Mr. Baron Platt decided that, in point of law, the fact o plaintiffs being co-adventurers did not, of itself, authorise Mr. Robinsonf to borrow money for the purposes of the mine, of which they were ignorant, nor was it any ground on which their credit could be pledged for money borrowed. He considered the case *distinguishable from other trading concerns*, and did not see how the jury could have come to any other decision than the one at which they had arrived—viz.: finding a verdict for the defendants.

This principle may be said to have originated when tin was the only metal known, or worked, in the counties of Cornwall and Devon, and was adopted by the tinners, or labourers, working in tin mines, who, unable to keep their own accounts, employed a person for such purpose, by them denominated a "purser." He kept their accounts in what was denominated the "cost-book," advanced them, from time to time, such money as they required, balanced up their accounts, and divided among them any profits which might have arisen, at the end of every two months. In process of time other parties than tinners, or labourers, embarked in mining pursuits, who were termed adventurers, or shareholders, and the purser, acting as agent for both parties, paid the dues to the "lords," dividing the profits among the adventurers. This led to the establishment of the Stannary Court, held every two months for auditing the pursers' accounts and settling any disputes which might arise between any of the parties connected with the mines. This court, however, did not extend beyond tin mines; and as copper mines became of consequence, and silver-lead mines were discovered, it became necessary to extend the authority of the court to those mines also; and, about the year 1834, an Act of Parliament was passed for the purpose of carrying out the rules of the Stannary Court. Courts of law and equity were established, under the jurisdiction of a judge, called the "Vice-Warden," the Prince of Wales being the Lord-Warden, to whom appeal can be made from the Vice-Warden's Court.

On summing up the general principles of the Cost-book System, it appears the direction and management of the mine is vested in the whole body of shareholders, who are not mere instruments in the hands of directors, the resolutions of the majority at their periodical meetings being acted upon. The power to act for the general interest is usually delegated to a committee of management, or to the purser; but neither of these parties have power to make calls, or perform other acts but such as are expressed in the regulations first laid down, or since altered or amended by general consent. Calls are made at general meetings, and every shareholder is liable for such calls upon his shares, whether he was present or not. If a shareholder neglects, or refuses, to pay up his calls, the committee of management are empowered, by a clause in the cost-book, to forfeit his shares, subject to confirmation at a general meeting. Or any creditor on the mine can sue such defaulter for goods supplied to the mine—a mode of procedure generally productive of the most summary results, it being only necessary for the purser to supply the name, &c., to any merchant who is willing to sue him. The purser has also a good action against him in the Stannaries' Court. On the other hand should any shareholder become dissatisfied with the adventure, he can, by giving notice, relinquish his shares, on paying his share of liabilities, when he is likewise entitled to his proportion of all the property, to be ascertained by valuation. Such are the general principles which guide all companies acting under the Cost-book System; but the specific details and bye-laws may differ according to circumstances.

Having thus, to some extent, shown what the system is, we will briefly advert to the localities in which it is considered to be available. The jurisdiction of the Stannary Courts is (and there cannot be two opinions on this subject) confined to the county of Cornwall; and we have ever contended (and nothing has ever been advanced to show that we are wrong), that these courts alone have power to interfere in the settlement of disputes between parties engaged in working mines under the Cost-book System, and, consequently, that in Cornwall alone does the law recognize the principle as differing from that of joint-stock companies and common partnerships. Notwithstanding these facts, the public are continually appealed to in prospectuses for carrying out all sorts of speculations in all parts of the kingdom, and even in foreign countries, under the Cost-book System. It is clear as the light of day that the whole are fallacies, and that, out of Cornwall, no such business partnership is known by the common or equity law of England. Even the adjoining mineral county of Devon must be considered beyond its jurisdiction, as, notwithstanding its proximity, it has ever been considered without the pale of the Cornish Stannaries, having had its own courts in ancient times, which have fallen into disuetude, and which doubtless might be legally and constitutionally reinstituted. Derbyshire had also, in ancient times, its local mining laws which have likewise become generally a dead letter.

The Act of Parliament, 7 and 8 Vicoria, cap. 100, commonly called the Joint-Stock Companies' Act, contains the following clause—"Provided always, and be it enacted, that nothing in this Act contained shall extend, or be construed to extend, to any partnership formed for the working of *mines, minerals, and quarries*, of what nature or kind soever, on the principle commonly called the Cost-book Principle." The registrar, under this Act, has given his opinion, that this clause extended the principle beyond the boundaries of Cornwall, to all parts of the kingdom, but on what grounds we cannot conceive; it certainly does not extend the jurisdiction of the Stannary Courts; and it appears clearly to us that this was only a saving clause to prevent the provisions of the Act in question from being diverted from their intended operation, and made the tools of interference with the working of *Cornish mines, minerals, and quarries* under the Cost-book System.

THE ALUM TRADE AND WORKS OF ENGLAND.

"Alumen" is often mentioned by the ancients, but it is perfectly clear it was different to the alum of the present day. It was most probably a sulphate of iron, sometimes probably a sulphate of alumina, and usually a mixture of the two. Where our alum was first discovered is entirely unknown; the manufacture was first carried on in the East. About 400 or 500 years ago there was a manufactory of it at Edessa, in Syria, at that period denominated Rocca, hence is supposed the derivation of the term *rock alum*, extensively employed in Europe. Several alum works existed in the neighbourhood of Constantinople. About the period of the dismemberment of the Grecian Empire, the art of making alum was transported into Italy. Bartholomew Pernix, a Genoese merchant, discovered alum ore in the Island of Ischia, about the year 1459; nearly at the same time, John di Castro, who was well acquainted with the alum works in the neighbourhood of Constantinople, imagined that a mineral fit for yielding alum existed at Tolfa, because it was covered with the like trees that grew on the alum mineral near Constantinople. This conjecture was verified, and the celebrated manufactory established there. Another was established at Genoa; about the year 1544 various manufactories were established in Germany; one was erected at Commotau, in Bohemia; at the same time another was built at Alcmaron, near Carthagena, in Spain.

Queen Elizabeth granted letters patent to Cornelius Devoz to mine for alum, but it was not until the latter end of her reign that Sir Thomas Chaloner, who, in his travels in Italy, examining the Pope's alum-works near Rome, and observing the mineral similar to one abounding in the neighbourhood of Guisborough, became desirous of making the attempt; but as he was unacquainted with the process, he found it necessary to procure workmen from the Pope's alum-works; by promises of large rewards, he induced them privately to come to England. This circumstance is said to have so exasperated the Pope, who till then had enjoyed a lucrative monopoly of the trade, that he fulminated a dreadful anathema against Sir Thomas and the workmen whom he had seduced. Fuller, in his *Worthies of England*, published 1662, thus describes the discovery of alum:—"This was first found out nigh Gesburgh, some 60 years since, by that worthy and learned knight, Sir Thomas Chaloner (tutor to Prince Henry), on this occasion. He discovered the leaves of trees thereabouts more deeply green than elsewhere—the oaks broad spreading, but not deep rooted, with much strength, but little sap; the earth clayish, variously coloured—here white, there yellowish, there blue, and the ways therein, in a clear night, glistening like glass—symptoms which first suggested to him the presumption of minerals and alum most properly. Yet many years interceded betwixt the discovery and perfecting thereof—some of the gentry of the vicinage burying their estates under the earth before the alum could be brought to its true consistency. Yea, all things could not fadge with them until they had brought, not to say stolen over, three prime workmen in hogsheads, from Rochel, whereof one Lambert Russel by name, and a Walloon by birth, not long since deceased. But when the work was ended, it was adjudged a mine royal, and came to be rented to Sir Paul Pindar, who paid yearly to the king 12,500*l.*, to the Earl of Moulgrove, 1640*l.*, to Sir William Penneman, 600*l.*, besides salaries to numerous clerks, and daily wages to rubbishmen, rockmen, pitmen, and homemen, or firemen, so that at one time, when the mines were in their majesty, I am credibly informed, he had no fewer than 800 in pay by sea and land; yet did not the knight complain of his bargain, who, having the sole sale of the commodity to himself, kept up the reputation thereof, and the price of alum at 26*l.* the ton. This did he the easier, because no better; and scarce other, save what from Rome and Rochel, in Europe. But the late long lasting Parliament voted it a monopoly, and restored the benefit thereof to the former proprietaries, who now pursue the work at five several places—1, Sandsend; 2, Ashholme, belonging to the Earl of Moulgrave; 3, Slapy-wath, Sir William (formerly Penneman's) Darcey's; 4, Dunsley, Mr. Thomas Fairfax; 5, Whitby, Sir Hugh Cholmley. Such is now the emulation between these owners to undersell one another, that the commodity has fallen to 13*l.* the ton. Great is the use hereof in physic, surgery, as a grand astringent. Besides much thereof is daily employed by clothiers, glovers, dyers; and so that some will maintain that another thing, as white and far sweeter of the two, may be better spared, with less loss to the commonwealth."

The successful prosecution of Sir Thomas Chaloner's works, induced the Darcey family to erect another alum work at Gisborough; and in the year 1615, the works at Sandsend, about three miles from Whitby. At this period, the coal trade was first established at Whitby, and ships were built to sail from there to Sunderland and London. In the year 1649, works were erected at Saltwick by Sir Henry Cholmley and Sir Richard Crispe. These were abandoned in the year 1708; but again resumed in the year 1755 by Ralph Carr, John Cookson, Richard Ellison, and Jonas Brown, Esqs. Another establishment, the same year, was commenced at Little Beck by Messrs. Howlett and Matthews. In 1764, works were commenced at Eskedaleside by Richard Jackson and John Yeoman, Esqs., and at Little Beck by Messrs. Scarth and Thornhill. At the commencement of the present century, alum works were established at Peak, Stroupehow, Saltwick, Little Beck, Eskedaleside, Sandsend, Kettleness, Lingberry, Boulby, and Guisborough; those at Goodlandbanks, Ayton, Carlton, Saltburn, and Osmotherley, were abandoned.

When these works were all wrought, about 6000 tons were made yearly, so that the market was greatly overstocked, and many families were ruined. About 3000 tons were made yearly the last years of the preceding century, the cost was then supposed to be about 14*l.* per ton. About 400 to 500 tons were shipped direct from Whitby to foreign parts; the rest was absorbed by the London market, to be disposed of as opportunity offered. Fuller states, that a mine was worked at Woodfold, near Pleasington, in Lancashire, but had long been neglected, on account of the expense of removing the superincumbent strata. The last adventurer was Sir George Colebrooke, whose speculation in this article terminated in his ruin. Works are now still existing at Whitby, and Hurlett and Campise, in the neighbourhood of Glasgow; there are several in Sweden, in the province of West Gothland. One of the largest is at Hensæter, near the borders of the Wenern Lake, on the west side of the Kinne Kulle Mountain. According to Mr. M'Culloch, the shipments from Whitby, in 1841, amounted to 3237 tons; the produce from Glasgow was estimated at about 1200 tons annually. From the same authority, we learn that China is a great seat of the manufacture of alum, and that there was exported in the year 1839, 35,642 piculs (2120 tons) from Canton. The process of reducing the alum at Tolfa is the most simple; there are several processes, but we shall give a sketch of that employed at Glasgow. The shale, which is obtained from coal pits, having been exposed for years, has gradually opened in the direction of a slatey fracture, and the chinks in it are filled with a saline efflorescence in threads. This salt is white, with a shade of green, has a sweetish astringent taste, and consists of a mixture of sulphate of iron and sulphate of alumina. In order to obtain these salts in a state of solution, nothing more is requisite than to lixiviate this shale with water. The lixiviated ore being left exposed to the weather forms more salt, which is gradually washed out of it by the rain-water; and this water is collected and preserved for use. The next step is to boil down the liquid to a sufficient state of concentration. The boilers are of stone, and the heat is applied to the surface. This is a great saving, as leaden vessels are not only much more expensive but require more frequent renewal. When the liquid is raised to a sufficiently high temperature in the stone reservoir, pounded sulphate of potash, or muriate of potash, is mixed with it; there is an agitator in the vessel by which it is continually stirred about; this addition separates the sulphate of alumina or alum. The liquid is let into another trough, and allowed to remain till it crystallises. In this liquid there are two salts contained in solution—viz.: sulphate of iron and alum—and it is an object of great consequence to separate them from each other. The principal secret consists in drawing off the mother liquor at the proper time, for the alum is much less soluble in water than iron, and, therefore, crystallises first. The first crystals of alum are found very impure; they have a yellow colour, and seem partly impregnated with sulphate of iron; they are dissolved in hot water, and the solution poured into troughs and allowed to cool a second time; these, though much purer, are not quite free from sulphate of iron, but the separation is accomplished by washing them in cold water. These second crystals are now dissolved in a quantity of water, as hot as possible, and the concentrated liquid poured, while hot, into large casks, the surfaces of which are covered by two cross-beams. As the liquor cools, a number of alum crystals form on the sides and surface. The casks are allowed to remain till the liquid within is supposed to be nearly of the temperature of the atmosphere. This in winter requires 11 days; in summer 14. Liquid has been known to stand in a cask 11 days in summer, at still more than blood heat. The hoops are then removed, as in the manufacture of alum from alum slate. There always remains in the boilers a residue, consisting chiefly of peroxide of iron. This is exposed to a strong heat in a reverberatory furnace, and becomes red. In this state it is washed, and yields more alum. The red residue is ground to a fine powder and dried. It can then answer the same purposes as Venetian red for a pigment. By altering the temperature to which this matter is exposed, a yellow ochre is obtained instead of a red. In France, where alum ores are not abundant, alum is manufactured from clay. This method was first put in practice by Chaptal, when Professor of Chemistry at Montpellier. Carsudau likewise describes a process which is practicable and easy, but unprofitable. At Hœnseter, in Sweden, the quantity of combustible matter in the alum slate is so great, that it is used as fuel for burning limestone. Soda alum was first mentioned by Mr. Winter in 1810, but before that time it had been made by C. Mackintosh, Esq., of Crossbasket, and Mr. W. Wilson, Hurlet, near Glasgow.

DIED,—On the 4th instant, at St. Austell, of the prevailing epidemic, Mr. Bell, mine agent for the Polgooth Company.

THE ABERGWESSIN SILVER-LEAD MINES.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—Finding my engagements heavier than the state of my health will allow me to fulfil to my own satisfaction, and feeling that some account of my stewardship is due to the shareholders, permit me to convey, through your valuable paper, to the directors and shareholders of the Abergwessin Silver-lead Mines, my warmest thanks for the confidence reposed in my humble efforts to bring these mines to a profitable issue; and to assure them that, in retiring from the management of the works, I carry with me—and am anxious to express it—a deep and lively sense of gratitude for the kind feeling expressed towards me at the last general meeting; and for the selection of my brother as my successor in the management.

This being the first, and, with one exception, the only mine I was ever instrumental in bringing before the public (coal mines excepted), I feel a natural, and, I trust, a laudable pride, in seeing all my opinions as to the results—which I expressed in the most unreserved manner four years ago—now more than realized. I then stated that, from the general indications, and the great size of the veins (which we Cornish men generally term champion lodes), if shafts were sunk, and levels driven, at 30 fathoms under the base of the mountains through which the veins of ore range, the shareholders might look, with confidence, to the receipt of dividends from even this shallow level. The shaft has been sunk, and the levels have been driven: and as we extend our levels into the mountains upon the course of the veins, our anticipations are crowned with the most complete success; there being at least 100 fathoms of backs from this level to the summit of the two mountains, upon the courses of the veins; and our water-power pumping-engines will allow of the mines being sunk 100 fms. deep; whilst the engine-shaft will pass through the lode from the 30 to the 40 fathom level; thereby investing this mine with a character of great and unusual stability.

About six or seven weeks ago, the directors called in a highly-respected authority on mines, to inspect the property, Capt. Matthew Francis—a gentleman whom I had never seen until after the inspection of the works (which took place during my absence); and in whose report I was gratified to observe a statement, that if the levels were extended, and another lift, or 10 fms. sunk, he had no doubt of Abergwessin rahking among the first mines in Wales, both for stability and profit. Since Capt. Francis's inspection and report—which was printed and circulated to all the shareholders—I have great pleasure in stating, that, as the 10 and 20 fm. levels progress, the ore daily increases, and, in fact, the whole of the ends, which do not carry a quarter of the lode we save for crushing and dressing. In the 20 fm. level we have a solid leader of lead, 6 in. thick, making larger in depth. We now want a crusher, which is in course of erection, with the other cleaning machinery. At the 30 fm. level we are cutting a plat, and shall cross-cut the lode, and drive each way, simultaneously with sinking another lift to the 40 fm. level.

Ample accommodation, contiguous to the works, is now provided for from 50 to 100 miners; and the company have also provided whim, and a team of waggon horses, to do their own work. If it should be determiued to smelt the ores on the spot, it may be done at a trifling cost; there being countless thousands of tons of peat lying waste, the use of which, for all purposes connected with the mines, free of cost, is provided for in the lease of the property. There is also abundance of fire-clay and stone, with water-power for all purposes.

As some reluctance was expressed, at our general meeting, to accept my resignation of the management, I beg to assure the shareholders that, so far as my power and ability extend, I shall ever keep a watchful eye to the welfare of this undertaking—an object alike consistent with my duty and my interest, since I hold, at this moment, upwards of 200 shares in the mines, some of them very recently purchased. But residing, as I do, in the county of Surrey, and having other engagements in Wales, Devon, and Cornwall, calling for my active exertions, I trust the shareholders will see that their interest will be best served by my retirement from the management of the works, and the substitutions in my place, of a resident manager who, I trust, will carry on the affairs of the mines to the perfect satisfaction of all parties concerned; and, although I may have no further connection with them than as a shareholder, I shall, at all times, be most ready to render to the company every assistance in my power.—PETER PAUL COUCH: *Russell-street, North Brixton, Oct.* 8.

LAKE SUPERIOR COPPER MINES.

At a recent meeting of the Scientific Association, at Cambridge, United States, DR. C. T. JACKSON, the late Government geologist, stated that he had satisfied himself that sufficient quantities of metal existed in the amygdaloidal trap of Lake Superior; he had recommended the opening of mines on Keweenan Point and near Eagle River, and the result proved that native copper veins existed which could be profitably worked. There are two classes of veins known to miners on Lake Superior—viz.: 1. Those running with the "country," or parallel to the course of stratified rocks through which the trap rocks pass—veins that are sometimes called beds, or interstratified masses.—2. Those which cross the "country," or cut transversely at various angles, the line of direction of the strata. These last are considered true veins, and are the only ones on which miners have hitherto relied for continuing productive in depth; irregular walls of solid copper, of some inches in thickness, have been observed in one of the new mines on the Ontonogan River, and sheets of considerable size have been found in the east and west veins on Isle Royale. The second kind, or transverse veins, run north and south, diverging east and west from 26 to 30 degrees, and consequently cut transversly across the line of direction of the trap rock and adjacent strata. In the hard trap rock they are pinched, or become narrow, thin plates of copper filling the fissures. The veinstone contains the following species of minerals—Prehnite, calc spar, laumonite, leonhardite, quartz, datholite, chabasite, mesotype, apophyllite, felspar, analcime, and wollastonite. At the Cliff Mine of the Boston and Pittsburg Mining Company, the vein at the top of the cliff consisted of prehnite, containing only minute scales of copper, and was only 6 inches wide; but it was found on descending, that this vein widened about 200 ft. lower down to 18 in., and lower still it had widened to 2 ft., and was charged with from 5 to 30 per cent. of metallic copper, and some particles of silver. The average yield of a large sample of the vein at the surface was found to be 5 6-10ths per cent. of copper, and it was estimated that the ore could be practically "bucked," or picked, up to 15 per cent. The width of the vein was estimated to be 3 feet at the base of the hill, where it was still concealed from view by the soil. On driving a level into the cliff, and one at the base of the hill, the vein was proved to be much richer than at the surface, and on sinking a shaft to the depth of 226 feet below the base of the hill, it exposed sheets of copper, varying in thickness from a few inches to 3 feet. These masses of copper filled the vein, and the prehnite and other zeolitic minerals disappeared. By carrying forward levels at the proper points, 60 feet below each other, and by stoping out the backs of the levels, large flattened elipsoidal masses of copper were exposed, and removed by heavy blasts of gunpowder. These masses were then cut up, by morticing out channels through them by means of steel chisels, driven by a heavy sledge hammer. Some idea may be formed of the rapid increase in richness of this lode, by comparing the poor prehnite vein at the top of the hill with the ponderous masses of pure copper that are now cut up in the mine below. One mass of pure copper, extracted while I was on the survey, weighed 80 tons, and other masses, probably of equal magnitude, were in process of being uncovered. Taking into account the height of the cliff in which the vein is seen, and the depth of the shafts at its base, we have the vein proved 526 feet deep, and thus far it has been steadily enriching, and has surpassed the most sanguine expectations of all miners and geologists who had examined it. Already this mine sends to market nearly 1000 tons of copper ore per annum, the ore being estimated to contain 60 per cent, of pure copper after it is cleansed of the adhering rock. This mine, it is understood, has paid for itself, and made a dividend of $10 per share to its owners. It is highly probable that other mines on Keweenan Point, if wrought with the same energy, would prove equally profitable; but nothing to this time has yet been attempted. The most promising at present are the North American, the Copper Falls, the North West, and the Phœnix, all of which have been sufficiently proved to warrant efficient working, and the veins and indications are similar to the above. The Lake Superior, or Phœnix Company's veins are rich in native copper and silver; masses of pure copper, weighing some thousands of pounds, were obtained from an ancient ravine, worn out by the river running over the vein, and large pieces of native silver were found. The promoters of this Phœnix Company were the first explorers of the strata for minerals, in the unbroken wilderness of Lake Superior, and to them is due the credit of having pioneered the way to all the discoveries since made.

WHEAL FORTUNE.—Saturday last being the setting day at this mine, near Breage Church Town, a pitch, called "Colenso's," was taken by a miner wishing to get employment at one farthing per fathom. This caused a quarrel and fight; and a constable being sent for, he struck Colenso on the head and face till he fell bleeding to the ground. On a surgeon arriving on the spot, life was found to be extinct.

CONSETT IRON-WORKS.—These extensive works are now better employed than they have been for some time past. A few days since the company lighted one of the furnaces which had been for some time blown out, and are preparing to light another.

PITMEN'S WAGES.—Since the late advance in the coal market several colliery-owners have increased the wages of the men employed, and thus added to the comfort of this important class of our industrial population. The pitmen, at collieries where no advance has been made, are seeking to be put on the same footing with their more fortunate brethren. At Ouston Colliery, the men have issued an address, appealing to the employers and their brother miners, that the former may not drive them to a strike, and that the latter may aid them in their effort to better their condition.—*Newcastle Guardian.*

Mining Correspondence.

BRITISH MINES.

ASHBURTON UNITED.—The following particulars will make the return of sales of ores from this mine perfect up to the present time:—

BLACK TIN,

Sold to the Charlestown Smelting Company, July, 1849.

Tons	*cwt.*	*qr.*	*lbs.*	*Price per Ton.*	*Amount.*	*Total.*
2	4	3	0	£39 0 0	£87 5 3	
0	5	1	19	26 0 0	6 19 6	£94 4 9

BLACK TIN—SEPTEMBER.

1	9	1	21	£41 0 0	....	64 12 7
0	3	1	11	30 0 0	———	

COPPER.

10	0	0	0	———	....	88 1 0
				Total amount		£246 18 4

ALFRED CONSOLS.—We have driven on the course of the lode in the 60 fm. level 6 ft. east and 6 ft. west; in the east end the lode is about 5 ft. wide, 2½ ft. of the north part is good saving work for copper ore; in the 60 fm. level west the orey part of the lode is 1 ft. wide; the lode, both east and west in this level, is looking very promising for something good. The lode in the 50 fm. level, east of Field's engine-shaft, is from 4 to 5 ft. wide, and from 1 to 2 ft. of the north part is saving work for copper ore, better than it has been at any time since driving from the shaft. In the 50 fm. level west we have been cross-cutting south on the lode; it is large, and dredged with copper ore—we have now resumed the driving of the level west. The lode in the 40 fm. level, east of engine-shaft, is about 3 ft wide, and poor.

BARRISTOWN.—We have suspended the eastern end for the present, although the branches are still rich, but too small to pay for working. The lode in the back of the adit level is rather improved, but still producing little ore. In the rise in the back of the 16 fm. level the lode contains more ore than last reported, which cannot be made available until the rise is holed to the adit level. The winze in the bottom of the adit level, west of the old workings, is suspended for the present from an increase of water; the lode is large, and containing good stones of ore. In the 24 fm. level end, west of engine-shaft, the lode is between 2 and 3 ft. wide, with stones of lead through it.

BEDFORD UNITED.—In sinking the engine-shaft, the ground continues to be hard, and our progress during the past month has, therefore, been limited. The 103 fm. level, east of the shaft, remains without any material alteration; the ground is tolerably easy for driving, and there is a small branch in the end letting down some water, which we expect will open into the south lode. In the 103 fm. level, east of Burley's winze, the lode is 3½ ft. wide, composed of can, spar, and ore, and likely to improve in the course of a few days; west of the winze, in the same level, the lode is 2 ft. wide, about 12 in. of it being good work, and the orey part increasing in size. In the 90 east we have cut through the lode, it is worth from 1½ to 2 tons of ore per fm.; the end is now under Evans's winze, and the men are placed to rise against it. In the 70 fm. level east the lode is nearly 4 ft. wide, composed of spar, with good stones of ore; the end is very wet, and we expect shortly to have a more open and better lode. Evans's winze, sinking in the bottom of the 80 fm. level, is down 5 fms.; the lode in the bottom is 18 in. wide, yielding a small quantity of ore; this winze, when holed to the 90, will ventilate the level, and open tribute ground. The tribute department is yielding as much ore as usual, and we can with ease maintain our samplings.

CARTHEW CONSOLS.—At the upper mine, the sumpmen have this week been engaged in cutting plat at the 55 fm. level; in this level, in addition to the tribute pitches last quoted, we have this week set a new tribute pitch, which is likely to prove good, also one in the 48 fm. level of equal promise, both at the same tribute; from these pitches we expect an augmentation in our next sampling. We have nearly cleared the middle shaft from the 38 to the 48 fm. levels. In the 38 fm. level the lode is much improved this week, and, with the end in the 38 fm. level, holds out great promise. The tribute department, exclusive of the above-named pitches, retains a very promising appearance indeed. The crusher works admirably well. At the lower mine, the ground in the adit end, in the south level, is much as it has been for some time past, as is the lode; but in the past week we have met with, in driving, several small branches, each containing lead, which are good indications.

CASCADE.—We have driven 6 ft. east and west on the course of the lode, which is now 2 ft. wide, composed of killas, quartz, yellow and grey copper ore, mundic, blende, and carbonate of lime or prian. I send you a box of specimens of the ore both from the east and west end. When we have opened a few feet further east and west from the cross-course, I shall be prepared to give a more decided opinion as to the character of the lode, which will then be more fully developed.

CWM ERFIN.—Our stopes, from the engine-shaft to the 10 fm. level east, are worth 8*l.* per fm.; from the 10 to the 20 fm. level east, 8*l.* per fm.; ditto from the 20 to 30 fm. level, 12*l.* per fm.; ditto from the 30 to 40 fm. level, 18*l.* per fm.; from the 40 to 50 fm. level east, 12*l.* per fm. Our 20 fm. level, east of the whim-shaft, is poor; the 20 fm. level, west of Roberts's winze, is poor; our 20 fm. level, east of ditto, is worth 10*l.* per fm. We have had a run in our adit level, in consequence of the very heavy rains which have fallen within the last two or three days, which will retard our breaking of ore for nearly all the coming week; however, we have stuff enough on surface to continue our dressing without alteration.

DEVON AND COURTENAY.—The lode in the winze sinking in the bottom of the 40 fm. level is 4 ft. wide, composed principally of spar and caples, with strings of ore interspersed through the lode, especially on the north side. The lode in the rise in the back of the 40 fm. level is 2 ft. wide, carrying a leading branch on the south part 8 in. wide, worth 8*l.* per fm. In the end driving east, in the 50 fm. level, on the gossan lode, the lode is 2½ ft. wide, composed of spar, mixed with soft killas, strongly impregnated with small branches of yellow ore. The pitches in the back of the south lode, in the same level, continue to yield good saving work.

EAST BIRCH TOR (TIN).—There is no material alteration since my last report. We have a large supply of water, and our stamps are knocking out the tinstuff as fast as possible, and I hope to have a satisfactory quantity of tin by Christmas. I shall send a box of specimens to the office next week.

EAST CROWNDALE.—In the middle shaft the lode is still of a promising character, producing some good stones of tin. In the stopes in the bottom of the 17, about 6 fms. east of the above shaft, the lode is about 8 ft. wide, 2 ft. of which are producing good work; in the stopes in the back of the 17 fm. level, the lode is worth 10*l.* per fm. In the 28 fm. level, west of Diamond's engine-shaft, the lode has very much improved since my last, it is now 3 ft. wide, composed of mundic, peach, prian, copper, and tin, the latter will pay for stamping. The rainy season having now set in, we are obliged to work the engine the whole of the time, therefore I recommend increasing the number of hands in the 28 fm. level west. No account as yet from the tin, I fear the vessel is still at Plymouth—I have written there to inquire.

ESGAIR LLEE.—During the past week the sumpmen have been engaged in putting in the penthouse, and cutting down the shaft below adit. The south lode in the deep adit, east of the engine-shaft, is at present small and poor. The north lode in the deep adit, east of the cross-cut, is a little improved since my last report, and is now producing some good stones of lead. The caunter lode in the shallow adit, west of Morgan's winze, is 4 ft. wide, looking very kindly, and will yield on an average 3 or 4 cwts. of ore per fm. The lode in the winze is looking better than last reported, and is again producing some good work.

EXMOOR WHEAL ELIZA.—At the last meeting, held on the mine, Sept. 3, I freely stated my opinion respecting driving east in the 24 fm. level, on the north lode, that, although it was under the gossan at the point of intersection, yet it was highly probable that the end would shortly again leave the mundic, and be in the run of gossan, as it was shallow, and driving in the exact direction of the hill's declivity. My influence, however, was counteracted, not by force of argument, but by a multiplicity of words, and the fact is, agreeably to my anticipations, that the lode in the present end is nothing but a mass of gossan. I will not hold myself chargeable for any results connected with driving this shallow level, but strongly protest against it. The cross-cut south, in the 24 fm. level, is being driven between 6 and 7 fms., and it is supposed about 5 fms. more will cut the south lode, where we have good reasons to hope for something good, as we are satisfied that the gossan does not run so deep in this as on the north lodes, but it is to be feared that nothing will be satisfactorily known for some time, as the mine is suspended, from the consideration that the purser cannot get in the respective calls; nor would I ever recommend resuming its working operations, unless a resolution be entered into to sink the engine-shaft, which, if done, would render it the very best speculation I know of in the mining world.

HAWKMOOR.—The following report on this mine has been forwarded us from Capt. Puckey, dated Fowey Consols Mine, October 6:—Agreeably to your request, I have inspected Hawkmoor Mine, and it gives me pleasure to say that your prospects are very cheering. From your personal knowledge of the mine, I need not enter into detail to describe the length of the levels driven, and ground explored; but this I can say, it is a very rare case to find so good a course of copper ore as you have now in your 20 end west, so very near where any former company ceased to work; still, I am not altogether surprised, for the appearances in the 10 fm. level, in my opinion, indicate something good below, and which has been proved by the development; you commenced in the 10 fm. level, and by the time you got to the 20 fm. level, I saw a course of copper ore in the end that will turn out 5 tons per fm.; and, in addition to that, the lode in the shaft (which is in course of sinking, and about 6 fathoms below the 20 fathom level, and about 15 fathoms to the east of where the lode is so good in the end) may be termed a tolerable good lode, in size about 2½ feet wide, 10 inches of which is good work, and the remainder otherwise spotted with copper ore, and composed of fluate of lime, and other favourable properties, which constitute a very kindly lode. The locality is also very good, there is Devon Consols to the north, Bedford United immediately to the east, and on the same lodes, and Gunnis Lake Mine to the south, which is in the granite; consequently, Hawkmoor being in the killas, and the lode underlaying south, will, in depth, intersect the granite; therefore, I consider it highly favourable towards the lode continuing to be productive in depth, and a great chance of its becoming richer as it approaches the granite, it having now made ore in the stratum bordering on the granite. You have other parallel lodes in your sett, that run into the Bedford United Mines, which I had not time to inspect. Taking all things into consideration respecting your mine, the great advantage of water power for pumping, drawing the stuff, crushing and dressing the ores, &c., she bids fair to be a valuable mine, and will, with a spirited development, very probably make a permanently profitable one. For her immediate prosecution, I would recommend the 20 end being driven east to get under a kindly part in the 10 fm. level, east of the shaft; and, further east, where a kindly gossan appears at the surface, I would also recommend the south shaft, near the wheel, being sunk as an engine-shaft, to supersede the other shafts, from which one of the south lodes can be tried. ——(P.S. By Mr. Carthew).—The south shaft alluded to is already 19 fms. deep, and will intersect the main lode at about 60 fms. in depth.

HEIGNSTON DOWN CONSOLS.—The sinking of Bailey's engine-shaft is completed to the 45 fm. level, and have cut into the capels of the lode about 3 feet. The water issuing from the end being strongly impregnated with mineral, I have no doubt, as the level is being driven, good results will follow. The 35 fm. level, east of the cross-cut, continues to produce occasional stones of grey ore; and in the past week a little yellow copper ore has been met with. The lode in the 20 fm. level, west of Hitchins's shaft, is for the present small and poor.

HENNOCK (SILVER-LEAD).—I am happy to inform you that we have cleared the adit home to the lode, and let down the water, without any accident whatever. On Thursday last, I went underground south, on the course of the lode, about 50 fms., and there I found another run. The air was so bad, that we could scarcely keep the candle burning. I broke a few samples from different parts of the lode in the back of the adit, a box of which I have forwarded to the office this morning. I took three samples to Capt. Prince, of Wheal Adams, for assay, and he returns me—No. 1, light gossan stone, 11 ozs. 3 dwts. 6 grs. of silver to the ton of ore; No. 2, dark stones of gossan, 2 ozs. 10 dwts. of silver and 1½ per cent. of copper to the ton of ore; No. 3, sulphate of copper (greens), 12½ per cent. of fine copper. The lode appears very large, principally made up with gossan, containing copper, silver, and manganese. I intend dialling to-morrow, and commence sinking the shaft for air, and for drawing away the stuff, and also for the engine-shaft. By properly selecting the gossan, I am very certain there is some much richer for silver than what I sent to Capt. Prince; but the shaft must be sunk before we can do anything to advantage on the lode.

HOLMBUSH.—The lode in the 120 fm. level south is 6 ft. wide, composed of quartz, prian, and lead, producing 3 cwts. of the latter per fm. The ground in the 120 fm. level cross-cut south, towards the flap-jack lode, is very favourable, being set at 4*l.* per fm.; 7 fms. were driven in September, and should the ground continue as at present, 8 fms. will be explored the month following. The lode in the 110 fm. level south is 2½ ft. wide, producing 3 cwts. of lead per fm. The flap-jack lode, in the 100 fm. level, east of the great cross-course, is 2 ft. wide, and will produce 2 tons of copper per fm., with every prospect of further improvement, and that speedily—it is set to drive by six men, at 5*l.* 5s. per fm., month stent.

KIRKCUDBRIGHTSHIRE.—The lode in the 62 end east is 2 ft. wide, yielding 5 cwts. of ore per fm.; the lode in the 62 end west is 4 ft. wide, the south side spotted with lead, yielding 5 cwts. per fm. The lode in the 50 end, west of Keith's shaft, is very kindly. We have put these men to rise against the winze coming down on the end, they have a good branch of ore in the rise, which we expect they will hole to the winze in two or three days. The lode in the 40 end west is 2 ft. wide, worth 8 cwts. of lead per fm. We shipped a cargo of lead on Tuesday last for the Holywell market.

LAMHEROOE WHEAL MARIA.—In the engine-shaft we have driven north 6 feet. At Darey's shaft the rods are completed for the present, and we shall be in readiness to commence driving after the ensuing week.

LEWIS.—The lode in the engine-shaft, sinking below the 70, is 2 ft. wide, saving work, and very much improved since my last; the lode in the 70 east is 3 ft. wide, and worth 6*l.* per fm.; the lode in the 70, east of ladder-road winze, on the south branch, is 2 ft. wide, yielding some good work for tin. The 60, east from the sump shaft, on the south branch, is worth 15*l.* per fm.; the lode in the 60 east, on Cook's branch, is much the same as when last reported. The 50, east from the sump-shaft, on the south branch, is opening tribute ground; the 50 east, on Cook's branch, is worth 5*l.* 10s. per fm.; the south lode in the 50, east from Oak shaft, is 1 ft. wide, and yielding some good stones of tin, with a very promising appearance. The lode in the 40, east from Praed's shaft, is 18 in. wide, saving work; the 40 east, on Cook's branch, is driving at 10s. tribute; the lode in the 40 west, on Cook's branch, is 1 ft. wide, and worth 5*l.* 10s. per fm. The stopes at the backs of the different levels are producing good average quality work.

MENDIP HILLS.—We have completed the reservoir mentioned in my last report, for the purpose of collecting water for Blackmoor dressing-floors; and, by the aid of a few more showers of rain, we hope to get a sufficient supply of water to commence operations with the dressing department on this part of your property. At Ubley, we continue to progress favourably with the dressing-floors; a great portion is completed; and we hope to see the whole in a fit state to commence operations in a short time. In Charterhouse slag-ground, we find a gradual improvement as we proceed towards the eastern part of the valley; the beds of stuff, which we are at present opening, being from 16 to 18 ft. thick, yielding some very good slags and slimes. We have had the furnaces at work during the past week; but it is found necessary to make some alteration in the blowing apparatus, which will prevent our making so much lead as we hope to do when these improvements are completed. It will be necessary to erect another blast-furnace at Charterhouse, and a reverberatory or flowing furnace at Ubley, in order to send down the pure slags to be smelted by the blast-furnaces. It is also quite indispensable that a office, store-room, assay office, and stables, should be erected at Ubley, in connection with the work; we have commenced building a shed at Charterhouse for depositing the slimes, coal, &c. I also beg to call your attention to the disposal of the water at Charterhouse Valley, so as to get all the washing floors there into active operation.

PENGELLY (TIN).—The ground is become harder, and there is an increase of water. Readwin's shaft is sunk from surface 20 fms. 4 ft. There is now to sink to the bottom of the deep adit 5 fms. The cross-cut, now driving by four men, is 6 ft. high, so that 4 fms. will hole to the cross-cut when driven under the said shaft, to accomplish which will take about six weeks. The ground in the adit level, shaft, and cross-cut, possesses characteristics of a very decided nature, and as the lodes adjoining the shaft in the shallow adits present prospects of a superior character, it is not too much to expect that they will produce large and lasting quantities of mineral, being imbedded in a stratum so very congenial for the production of tin; one thing is certain, that in a short time after the lodes are cut by the cross-cut in the deep adit level, there will be proceeds, and by extending the operations in the deep adit on the different lodes, and effecting communication by winzes with the shallow adit, there will be a progressive increase of returns for a long period.

SOUTH WALES MINES.—At Bodcall we are costeaning on the south, or the Frongoch lode, and in the shode pits the lode is looking kindly, and in the course of a week or two we shall be, I think, ready to drive an adit on the course of the lode. At Dalwin, the south, or the Frongoch lode, in the deep adit, east of the Rhydnet river, is 6 ft. wide, and is improved since my last report, looking very promising indeed, producing some good work for copper and lead. I have no hesitation in saying that I entertain not the slightest misgivings as to the result of this concern, aided by a little more of proper trial and development. We need now make some preparations for reducing the work, and to build a smiths' shop, for at present the men have no place at hand to shift their clothes in.

SOUTH WHEAL TRELAWNY.—The engine-shaft is in course of sinking with nine men; it is sunk below the 40 fm. level about 5 fms.; the ground is also still favourable, composed of a deep blue killas strata; there is also an increase of water. Everything is in a regular course of working.

TRELEIGH CONSOLS.—Garden's shaft, below the 113, is now down to the 125 fm. level, and shall commence driving towards the lode next week. In the 90, west of ditto, lode 2 ft. wide, with stones of ore. In the 80, west of ditto, lode 20 in. wide, worth 15*l.* per fm.; in the 80, east of cross-cut, lode 2 ft. wide, worth 8*l.* per fm.; in the winze below the 80, lode 18 in. wide, with stones of ore. In the winze below the 70, lode 20 in. wide, with good stones of ore, and is looking kindly. In the 60, west of Garden's, the lode is 18 in. wide, with stones of ore. At Wheal Parent, the engine-shaft below the 30, sinking in the country. In the 30, east of ditto, the lode is 3 ft. wide, worth 8*l.* per fm.; in the 30, west of ditto, no lode taken down this week. In the winze below the 20, lode 1 ft. wide, poor. In the whim-shaft, below the 12, lode 9 in. wide, with stones of ore. At middle lode, Nicholson's shaft, below the adit, lode 1 ft. wide, poor. In the adit, east of ditto, lode 18 in. wide, worth 4*l.* per fm.

WEST WHEAL JEWEL.—The 85 fathom level, west of Williams's cross-course, on Wheal Jewel lode, is worth 3*l.* per fm.—drove last month 2 fms. 1 ft. 6 in. The 70 west, on same lode, is producing stones of ore—drove last month 1 fm. 5 ft. The 47 fm. level, east of ditto cross-course, on same lode, is worth 4*l.* per fm.—drove last month 2 fms. 2 ft. 6 in. The deep adit west, on ditto lode, is unproductive—drove last month 2 fms. The 12 fm. level, west of Tregoning's shaft, on Tolcarne tin lode, is unproductive—drove last month, 1 fm. 5 ft. 6 in. The deep adit, west of Tregoning's shaft, on ditto lode, is producing stones of tin—drove last month 1 fm. 3 ft. 6 in. The 57 cross-cut, north from Buckingham's lode, drove last month 5 fms. 0 ft. 6 in. The shallow adit cross-cut, south from Tolcarne tin lode, drove last month, 2 fms. 0 ft. 6 in. The stopes in the back of the 12 fm. level, west of Pryor's winze, on Tolcarne tin lode, worth 12*l.* per fm.; the stopes east of this winze, on same lode, worth 11*l.* per fm.; the stopes in the bottom of this level, east of Tregoning's shaft, on same lode, worth 18*l.* per fm.; the stopes in the bottom of this level, east of Pryor's winze, worth 20*l.* per fm. These stopes are working on tribute.

WHEAL BASSET.—The following report was presented to a meeting of shareholders held at the mine on the 2d inst., the proceedings at which were noticed in last week's Journal:—Williams's lodes: Dennis's shaft is being cut down with all possible speed and the adit cross-cut towards said shaft will be communicated in about a week, when we shall commence driving on the north and south lodes in this level, which are looking very well, and promise to be productive. The 20 fm. level, on south lode, is driven east of Dennis's shaft 38 fms., a good lode most of the distance, and now worth 20*l.* per fm. The 30 fm. level, on said lode, is driven east of said shaft 60 fms., 50 fms. of which are worth 25*l.* per fm.—at present 15*l.* per fm. The 40 fm. level, east of the intersection, has been driven 32 fms. through good ore ground, the present end worth from 8*l.* to 10*l.* per fm.; in a winze sinking below the said level, 8 fms. behind the end, the lode is worth 25*l.* per fm. Magor's shaft, sinking below the shallow adit, is down 2 fms. The 90 fm. level is driven east of the cross-course 40 fms., which has passed through bunches of ore, but the lode, which is 3 ft. wide, is at present poor; in the rise above the 90 fm. level the lode is 2 ft. wide, worth 6*l.* per fm. The 70 fm. level, east of Dennis's shaft, has been driven 65 fms., and passed through short bunches of ore—present end producing a little ore. The 50 fm. level, east of Dennis's shaft, has been driven 70 fms., in good ore ground most of the distance—the end is now worth from 10*l.* to 12*l.* per fm. The 40 fm. level, east of Dennis's shaft, has been driven 68 fms., a good lode for 60 fms., the last 8 fms. not so good, nor is the present end; there is a winze sinking below this level 9 fms. behind the end, which is worth 20*l.* per fm. The 30 fm. level, east of Dennis's shaft, has been driven 38 fms. through a fine gossan lode, but not much ore. The 20 fm. levels, west of Dennis's shaft, on Bone's lode, has been driven 11 fms. through a kindly lode, with bunches of rich ore. We are stoping the backs of the 30, 40, 50, and 60 fm. level, east of Dennis's shaft, by four men in each stope, and they will average 25*l.* per fm. The 70 fm. level, south of Williams's lode, has been driven 66 fms., and no lode discovered yet.—Theaker's Lode: The 110 fm. level is extended 6 fms. east, and 10 fms. west of Theaker's shaft—lode in general small and poor. The 100 fm. level is extended 50 fms. west, of which 30 fms. has been worth 10*l.* per fm. The 60 fm. level west has been driven 90 fms., of which 60 fms. is good ore ground, and 20 fms. poor, but in the last few fathoms the lode has improved, and is now worth 5*l.* per fm.; a winze sinking below the 30 fm. level, 95 fms. west of Theaker's, is in kindly ground.—Great Lode: The 100 fm. level, west of the cross-course, at Theaker's shaft, is only opened 3 ft., and the lode is 3 ft. wide, with stones of ore; we expect to cut the lode east of the cross-course in a few days. In the 60 fm. level, west of Rogers's shaft, the lode is disordered at present. The winze sinking below the 50 fm. level, 12 fms. west of the old engine-shaft, was worth for 2 fms. 30*l.* per fm., but is now in soft ground, with good stones of ore. Richards's engine-shaft is sinking below the 60 fm. level, south of the lode; we are also driving a cross cut, north of Williams's shaft, in the 50 fm. level, to intersect this lode.—Lloyd's Lode: The winze sinking below the adit is in a kindly lode. The 20 fm. level cross-cut, south of old engine-shaft, towards this lode, is in rather soft granite, and we expect to cut it in 3 or 4 fms. driving. In the rise above the 50 fm. level the lode is 2 ft. wide, opening tribute ground. The 50 fm. level, west of cross cut, has been driven 25 fms. in tribute ground, lode in the present end poor; there is a cross-cut driving south of Rogers's to cut this lode at said level. The 60 fm. level, west of the cross-cut, has been poor.—Giesler's Lode: The 40 fm. level, west of Theaker's cross-cut, has been driven 6 fms., lode 18 in. wide, opening tribute ground; the said level east is driven 3 fms., lode 1 ft. wide, producing stones of ore. There is a cross-cut driving in the 70 fm. level to intersect this lode, which will be seen in about two months. Carn Kie shaft is sunk to the 75 fm. level, which level is driven a few fathoms west; the lode is 8 ft. wide, more kindly for copper than tin ore. Sampson's shaft is sunk 8 fms. below the 55 fm. level, north of the lode. Boundary shaft, sinking below the 15 fm. level, is down 8 fms., lode worth 20*l.* per fm. for tin. The 15 fm. level, east of Boundary shaft 2 fms., lode worth 12*l.* per fm.—North Basset Lode: Buller's shaft is sunk 4 fms. below the 15 fm. level, but owing to the increase of water is suspended. The 15 fm. level is driven east 2 fms., lode 12 in. wide, with spots of copper, but not to value. The adit is driven east of Buller's shaft 60 fms., lode composed of gossan, about 3 ft. wide. Previously to more extended workings in the south mine, we are now sinking a shaft to communicate with the adit west. On the whole, the mine has never looked better, and we hope, ere long, to increase our quantity of ore.

WHEAL SOPHIA.—The lode in the 12 fm. level, east of Boundy's shaft, in the last 2 or 3 fms. driving, is greatly improved, and is now 4 ft. big, carrying more mundic, copper ore, peach, prian, sugary spar, and a strong capel, which indicate that we are getting near the shoot of ore we drove through in the adit level. The lode in the 12 fm. level west is improving both in size and quality, possessing more mundic, ore, peach, prian, spar, &c. In a few fathoms further west we expect to intersect a cross-course, which will, no doubt, improve the lode.

WHEAL BRIDFORD.—The adit is driven towards the lode 16 fms., which is, I think, half way. The ground is very favourable; but rather expensive for timber.

WHEAL LAWRENCE.—I have set the adit for driving south on the course of the lode 5 fathoms, at 28s., and to timber and secure the same. The whim-shaft to be sunk 3 fms., at 70s. The shaft is now 18 fms. 6 in. from surface. The adit level is driven south 45 fms. The lode in the end is looking exceedingly kind for making a bunch of lead shortly; in fact, I have never seen a more kindly lode that did not produce more lead, and shall be most sadly disappointed if we do not meet with a bunch of lead before we reach the shaft. This great north and south lode makes in three parts, and we are only driving in one part; but, as soon as the adit communicates with the shaft, we shall cross-cut, and see what each part is made of. We shall complete the communication, I expect, in about two months. We are constantly meeting with branches in the shaft, containing lead, mundic, spar, &c., which look well for forming a body at a greater depth.

WHEAL MAY.—The purser reports—We have this day received from the mine a box of specimens from the newly-discovered lode; they are of a somewhat unusual description; so far as being found on the back of a lode so near the surface, we believe them to give positive indications of a very valuable copper lode not far from our present workings; they possess every characteristic of such, being composed of green and red oxides, blue carbonates, mundic, spar, and spotted throughout with yellow copper ore. The lode was opened on by making a pit 8 or 10 ft. deep, where it was found to average 3 ft. wide; the water was very troublesome for sinking, therefore nothing more was done in exploring it, neither shall we until it is cut in the adit, which we hope to do in about six weeks. We have had several scientific and mining gentlemen call at the office to examine the specimens, and the prevailing opinion is, that they are very flattering, and that they will greatly add to the success of the company, by bringing in capitalists to patronise the adventure.

WHEAL TRELAWNY.—In the 82 end, north of Phillips's shaft, the lode is 3 ft. wide, worth 5*l.* per fm.; in the south end, in this level, the lode is also 3 ft. wide, worth 5*l.* per fm. In the 72 end north the lode is 3 ft. wide, worth 6*l.* per fm.; in the south end, in this level, the lode is 2½ ft. wide, worth 9*l.* per fm. In the 62 end north the lode is 4 ft. wide, worth 15*l.* per fm.; in the winze sinking under this level, north of the shaft, the lode is 2½ ft. wide, worth 8*l.* per fm. About 25 fms. still further north we have commenced another winze (for the purpose of ventilating the 72 fm. level, north and south of Trelawny's), where the lode is 3 ft. wide, worth 17*l.* per fm. Trelawny's shaft is still in a favourable stratum, and is down 7 fms. 2 ft. under the 72 fm. level. In the 72 end, north of this shaft, the lode is 2 ft. wide, worth 8*l.* per fm.; in the south end, in this level, the lode is 3 ft. wide, worth 5*l.* per fm. In the 52 north the lode is 3 ft. wide, worth 9*l.* per fm. In the winze sinking in the bottom of the 42, north of the shaft, the lode is 2 ft. wide, worth 11*l.* per fm. At the north mine, in the 55 end, north of Trehane boundary, the lode is 2½ ft. wide, worth 5*l.* per fm. In the 50 end, south of Smith's shaft, the lode is 3 ft. wide, worth 6*l.* per fm. In the 40, north of this shaft, the lode appears to be disordered by another part of the cross lode, but it is still producing stones of lead. In the winze sinking under the 30 fm. level, north of the shaft, the lode is 1½ feet wide, worth 4*l.* per fm. The stopes throughout the mine continue to yield much as usual.

WHEAL VINCENT.—In driving north from the engine-shaft, to cut the north lode, we are cutting small veins, and a great deal of water is proceeding from the present end, inasmuch that we are obliged to drop another lift; the ground still continues soft for driving, and I consider the strata to be congenial for tin. We are getting on very satisfactorily with the shallow adit to the south shaft, so as to unwater it; the ground is soft for driving. We have cut the lode by the new shaft to the western extremity of the sett, but cannot say much of its value, as it is but just opened on; however, we have broken some good stones of tin. I hope to state more of its value in my next. Our stamps are working well, with a full supply of water, stamping out some fair work for tin.

WHEAL PENHALE.—In the engine-shaft the ground continues rather favourable to our sinking, and in the lode I find no particular alteration. In the north end (20 fm. level) a great improvement was met with yesterday in an important discovery of copper in the lode; but up to this moment we have not been able to ascertain to what extent, not having cut through it, though, from all appearances, it is very large and good. The lode in the south end, in this level, remains with but little change. The lode in the south end (10 fm. level), which we have recommenced driving, is split by a horse of killas. The tribute pitches are looking very well.

FOREIGN MINES.

LINARES LEAD MINES.—Extract of letter from Mr. H. Thomas, dated Linares, Oct. 3.—It gives me much pleasure to acquaint you, that we started the engine at Pozo Ancho in good style, on Monday, and are now forking the mine. The water has sunk about 2 ft. since yesterday mid-day, when we commenced working continuously. This proves the existence of very extensive workings under the first level, much of which, indeed, is visible to us. The engine works extremely well; the pit-work is well fixed, and all the work done is creditable to the engineer, pitman, carpenter, smith, and miners, all of whom have done their best to advance the work to its present point, and to all of which Captain Curry has added unceasing attention and vigilance. We have celebrated this event, by giving a treat to our men; we roasted two sheep whole, made some good punch with Val de Penas wine, and christened the engine and shaft, or rather confirmed the old name, of San Thomas. We were visited, on the occasion, by the inspector of the district, Don Francisco de Salis Garcia, who expressed his satisfaction at our progress, and has shown much interest therein. The other boiler arrived on Sunday.

MINING NOTABILIA.

[EXTRACTS FROM OUR CORRESPONDENCE.]

KINGSETT AND BEDFORD is looking very fair. We are now engaged in sinking a winze from the south end to the adit for stoping and ventilation. I hope we shall shortly get our floors in order for dressing; after the winze is holed, we shall be breaking a quantity of lead.

LLWYNMALEES.—I have been upon this mine, and made every inquiry respecting the recent discovery, which is in the 8 fm. level west, on the south lode, and it is one which will prove highly important—being a regular course of ore, from 12 to 18 in. wide, nearly solid; and there are several branches, or feeders, accompanying the lode. I have seen some beautiful stones of ore, weighing from 3½ to 4 cwts. each, now in the counting-house, which certainly encourages us to look for more early and profitable returns; in the western winze there is some excellent ore; and I learn that the 14 fm. level west looks better than ever before seen. The prospects in the London shaft are very encouraging; and, upon your applying at the office, you will find the captain's report to confirm all I have stated.

WHEAL ANDERTON.—In driving the cross-cut in the 80 fm. level, to cut the Tavistock Consols lode, water has been let down, which induces the confident belief that the ore of these lodes is not far ahead. The Wheal Ash lode, having been at the adit level driven nearly 60 fms. through an immense course of mundic, nearly solid, ore may be fairly calculated on 80 fms. deeper; and as there is a considerable length of lode in this sett, the shareholders in Wheal Anderton are looking forward with the greatest anxiety to seeing these lodes

ACCIDENTS.

Wolverhampton.—A melancholy accident happened at the Swan Garden Iron-Works to Martha Payton, wife of a roller employed at the works. She was going into the engine-room with her husband's supper, and was in the act of stepping over the shaft of the machinery which drives the shears, when her cloak caught it and became entangled, and she was drawn round it several times with great violence. Several parties witnessed the occurrence, and the machinery was stopped as quickly as possible, but the poor woman was quite lifeless.

Bilston.—Three miners who had gone to work in a gin-pit, recently opened at the Fireholes, near Bilston, had a narrow escape from being buried alive. Shortly after they commenced work, the sides of the shaft fell in, and they were thus completely cut off from all intercourse with the outer world. Fortunately, however, the pit is not a very deep one, and an alarm having been raised by the banksmen, the assistance of several persons was obtained, who descended the shaft to clear away the earth which had fallen in. A couple of hours' hard labour was rewarded by finding the three men little the worse of their incarceration, although they were very much exhausted from anxiety as to their probable fate.—*Birmingham Journal.*——J. Pitchford, aged 16, was killed by a fall of coal, in a pit belonging to Messrs. Sparrow and Sons, Queen's Gardens.——J. Wootton, aged 14, has died from the effects of an explosion, which took place on the 5th Sept., at a colliery in Birmingham Fields. It appeared that Wootton and two other boys went along the gate road contrary to the direction of the "doggy," and Wootton put a lighted candle into the end of an iron pipe lying by the side of the road, when an explosion instantly took place, and the deceased and another boy were very much burned.

Tividale.—Job Bradley sustained a severe injury to his back, and had three or four of his ribs broken, by the fall of a number of bricks from the side of a shaft of a pit belonging to the colliery of Messrs. Wagstaff and Skidmore, at Tividale.

Sedgley.—J. Green has died from severe injuries received in a stone pit at Parkfield, on the 27th Sept., by a large quantity of stone and rock falling upon him from the roof. His left leg was broken in two parts, and he was much bruised on various parts of the body. The deceased had neglected to prop the roof, although there was plenty of timber at hand in the pit.

Dudley.—J. Walker, aged 15, has died from the effects of burns received while at work at Mr. Darley's stone pit, at Cradley. The accident, which resulted in the injury of two others of the pit's company, but not seriously, occurred from the unexpected explosion of a quantity of gas which accompanied a fall of loose earth, and ignited from the light of a candle, with which the deceased with others was working. The occurrence was represented by witness (one of the men injured, and who appeared with his left arm in a sling) to be the result of accident.

Derbyshire.—As J. Crich and a companion were working in the Shipley hard coal-pit they had attempted to force down a piece of coal, and having succeeded, the deceased was cautioned to get out of the way; but instead of doing so, he struck the coal with his shovel, and said that he should have plenty of time to fill that truck and another before the coal would fall. The deceased was proceeding to fill the truck, when the coal fell upon his head, which was very much injured, and ultimately caused death.

Yet Infera.—R. Daniels, furnace-man, was severely hurt while cutting off the end of a hand-bar (in the smith's shop); the bar bounded red-hot from the anvil, and unfortunately stuck into his thigh; the unfortunate man applied both his hands to the seething bar, in trying to withdraw it, by which he burnt them in a shocking manner.

Walker Iron-Works, near Newcastle-on-Tyne.—On Friday week one of the boilers of the steam-engines at this place burst with a loud noise. Fortunately, none of the workmen were killed, though two or three were seriously injured, but are in a fair way of recovery.

THE HYDRO-ELECTRIC MACHINE.—Dr. Bachhoffner is now rendering the Polytechnic Institution highly attractive by lectures on electricity, illustrated by Armstrong's gigantic machine. This hydro-electric apparatus is merely a steam-boiler insulated, by being mounted on glass legs; it has a series of zig-zag pipes for the escape of the steam, and from the friction got up between particles of condensed vapour and the steam, an immense volume of intense electric fluid is genetated. This machine is one of the most powerful in the world, and its effects are truly astonishing, reminding us of the grand results of Nature's electricity, and its ponderous powers; by it the lecturer explodes gunpowder, ignites numerous inflammable materials, and exhibits many striking and interesting experiments. Several new views of Rome have been added to the exhibition, the interest being much increased by the late stirring events which have taken place in that city.

Proceedings of Public Companies.

MEETINGS DURING THE ENSUING WEEK.

WEDNESDAY .. European Life Insurance Company—offices, at One.
Independent Gas-Light and Coke Company—London Tavern, at One.
THURSDAY .... West London Railway—London Tavern, at One.

CALLINGTON MINING COMPANY.

The quarterly meeting of shareholders was held at the office, Salvador-house, Bishopsgate-street, on Wednesday, the 10th inst.,

PETER STAINSBY, Esq., in the chair.

Mr. ENSOR having read the notice convening the meeting, the CHAIRMAN proceeded to read the following

DIRECTORS' REPORT.

The operations conducted at the mine will be shown by the agent's report, which will be read. The accounts have been sent to the shareholders in the usual course, and the directors will be happy to afford any explanation. You will perceive by the agent's report, that the total number of 158 fms. 4 ft. 3 in. have been driven and sunk during the three months, and that there are excellent prospects in the lead lode. The copper lode, we regret to say, has disappointed the expectations entertained of it; and it was the intention of the directors to have abandoned all further outlay on this portion of the company's undertaking, but the present appearance of the 70 fm. level induces them to suspend the execution of this intention as regards this part of the mine.

Statement of Accounts for Three Months, ending June, 1849.

EXPENDITURE.

Balance from last account			£ 872	18 2
Amount of April cost	£1036	3 8		
Ditto May ditto	1120	1 10		
Ditto June ditto	1056	0 8	—3212	6 2
Interest and discount			23	8 6
Disbursements—Directors' attendances	£62	10 0		
" London management	50	0 0		
" Petty cash	26	1 3	—138	11 3
Total			£4247	4 1
Balance	£1639	2s. 11d.		

RECEIPTS.

Silver-lead ores—April returns	£945	12 1		
" " May ditto	884	2 0		
" " June ditto	778	7 1	—2608	1 2
Balance			1639	2 11
Total			£4247	4 1
June subsist	£108	10s.		

KELLY BRAY DEPARTMENT.

EXPENDITURE.

Balance from last account			£3032	11 11
Amount of April cost	£302	11 0		
Ditto May ditto	372	0 2		
Ditto June ditto	302	7 11	—976	19 1
Total			£4009	11 0

RECEIPTS.

Copper ores—April returns	£135	14 5		
" " May and June ditto	111	17 1	—247	11 6
Twenty-first instalment	£1000	0 0		
Twenty-second ditto	1000	0 0	—2000	0 0
Balance			1761	19 6
Total			£4009	11 0

The following report from Capt. W. Nancarrow was read:—

October 6.—In compliance with your request, we beg to hand you our report of the above mines, with a detailed statement of operations since your last general meeting. The north engine-shaft has been completed to the 125 fm. level, 2 fms. of which has been sunk in the last three months, plat cut, and cross-cut driven 2 fms. 3 ft. west towards the lode—this level is now being driven by six men, at 11*l.* per fm. The 112 fm. level north has been driven 15 fms. 2 ft. 6 in., opening ground that will work at a low tribute; the same level south has been driven 19 fms. 2 ft., laying open ground that will work at from 4*s.* to 5*s.* in 1*l.*—at present this end will produce 5 cwts. of silver-lead ore per fm. The 100 fm. level north has been driven 14 fms.; this end has been suspended, being near the boundary; the 100 fm. level south has been driven 4 fms. 2 ft. 9 in., and communicated with the south mine. The 90 fm. level south has been driven 4 fms. 3 ft. through ground that will work at a high tribute; we have also sunk the counthouse shaft from the 90 to the 100 fm. level, the men are now engaged cutting plat &c. in the latter level. At the south mine, the 125 fm. north has been driven 13 fms. 4 ft. 6 in., opening ground that will work at a moderate tribute; the lode at present in this end is disordered by a small cross-course. The 125 fm. level south has been driven 4 fms. 5 ft.; the indications in this level present a more favourable appearance than for some time past, now producing 2 cwts. of silver-lead ore per fm. The 112 fm. level north has been driven 8 fms. 3 ft. through disordered ground; although this level is at present poor, yet we look forward to a speedy improvement, considering the level above, where we had good ore ground for many fathoms in length. We have also sunk a winze from this level to the 125 fm. level, opening tribute ground; the 112 fm. level south has been driven 4 fms. 0 ft. 9 in. through ground of a high tribute character. The 90 fm. level south has been driven 6 fms. 3 ft. through ground producing silver-lead ore, but not rich. The 70 fm. level south has been driven 2 fms. 2 ft., opening good tribute ground; this level has been suspended for the convenience of working tribute pitches, but we hope soon to resume it again, being in ground congenial for silver-lead ore; the lode in the back of this level contains more silver to the ton than any other part of the mine. The 40 fm. level south has been driven 8 fms. 1 ft. through ground producing a little silver-lead ore. At Kelly Bray, the 100 fm. level west has been driven 3 fms. 4 ft. 6 in., and the 90 fm. level east 2 fms. 4 ft. 6 in. through unproductive ground; both these levels are suspended. The 90 fm. level west has also been extended 9 fms. 1 ft., lode small and poor for the last 5 fms.; the 70 fm. level east has also been driven 8 fms. 5 ft. 9 in., the lode being about 2 ft. wide, producing good stones of copper ore. The 50 fm. level east has been driven 7 fms. 0 ft. 6 in., the lode in which is 2½ ft. wide, producing occasional stones of copper ore. The 30 fm. level east has been driven 8 fms. 0 ft. 6 in., the lode being 9 in. wide, containing stones of copper ore. Kelly Bray engine-shaft has been sunk 5 fms. 5 ft.; this shaft is now down 10 fms. 3 ft. below the 32 fm. level, the men are now engaged in cutting plat, &c., in this level, preparatory to our sinking below—total number of fathoms sunk and driven in the past three months, 158 fms. 4 ft. 3 in. In conclusion, we beg to say that, though our prospects are not so good as we could desire, yet the 112 fm. level, in the north mine, will guarantee our steady perseverance with the cross-cut below. We calculate it will take us five or six months from the present time to cut the lode; when this object has been accomplished, we anticipate increased returns. We have now laid open ground in our 112 fm. from 70 to 80 fms. in length, but, not being in a position to work this ground before, a rise was communicated with the level above; this being done, we last Saturday set a pitch to four men in the back of this level at 4*s.* in 1*l.*, and we calculate the greater part of this ground will work at a low tribute, with a great number of fathoms yet to be laid open, especially in the south level, judging from the level above. We regret that our lead samplings have fallen off of late, but this may partly be accounted for, owing to the late epidemic, which has proved so fatal in this neighbourhood.

The CHAIRMAN said that he had that morning received a letter from Capt. Nancarrow, dated from the mines, on the 9th inst., in which he gave a more favourable account of the Kelly Bray than that contained in the foregoing report, and he would, therefore, read it to them. It stated that the writer had just come from underground, and was happy to report an improvement in the 73 east, on Kelly Bray. The lode was about 2 ft. big, composed of copper ore, peach, and mundic. The orey part came down from the back of the end, now down about two feet and a half; and though he could not tell what it was going to make, he must say that he had never seen the level present such kindly appearances since he had been connected with the mine.

In answer to a question, Mr. PERCIVAL JOHNSON stated he considered the mine might be brought to a profitable state, provided the working on such parts as were unproductive was suspended, and the operations at the north mine continued, as he had recommended they should be three years since. He regretted that his advice had not been taken for raising a capital of 5000*l.*, to work the Kelly Bray lode independently of the lead lode, at the time when it was first proposed to work that lode, as that amount, with the ore which it had returned of the value of 5477*l.*, would have nearly paid the cost, and the engine and machinery would have been paid for. He considered that it would require about 1000*l.* to enable him to open and render the great length of ore ground at the north mine productive to the proprietors.

A short desultory conversation ensued, in which it was stated that, though there was a debt existing against the mine of 3400*l.*, it was not thought that it would be necessary to make any further calls on the proprietors, at least for the present, as the credit of the company was good, and there existed some arrears of calls which might all be considered good. If it was resolved to abandon the Kelly Bray, they had plenty of assets, consisting of plant, &c., to meet all its liabilities; but looking at the prospects held out in the 70 fathom level, it was not proposed by the directors to take that course. There could be no doubt that, in order to expedite the work on the Kelly Bray, which at first held out extraordinary promises, the north or lead mine had been neglected, but the shaft had been lately sunk 15 fathoms, and it was now making profitable returns to the company. If Mr. Johnson's proposition was adopted, there could be no doubt that the expenses would be considerably reduced.

Mr. JAMES moved the adoption of the report, and expressed the utmost confidence in Mr. Johnson's plan, which he hoped would be carried out.

The CHAIRMAN, having stated that the directors had already agreed to adopt the suggestions of Mr. Johnson, which he showed by a minute of the board which he read to the meeting, the resolution was put, and unanimously carried.

In the course of another conversation, Mr. JOHNSON took occasion to thank the directors and shareholders for the confidence placed in him, and stated that it ought to be recollected that, during a great portion of the last three months, not more than two-thirds of the usual labour could be obtained, in consequence of the prevalence of cholera in the mining districts, there having been 700 cases out of a population of 1630, though, fortunately, but few had proved fatal. He might mention, that everything had been done by the company to alleviate the condition of the men and their families, provisions being gratuitously supplied to them during their illness.

The CHAIRMAN observed, that great credit was due both to Mr. and Mrs. Johnson, who had continually exerted themselves to alleviate the distress and suffering of the workpeople, and make them feel that the company considered their interests identical with those of the proprietors. (Hear, hear.)

A cordial vote of thanks having been given to the chairman and directors, more especially to Mr. Johnson, for their exertions in promoting the interests of the company, which was briefly seconded, the meeting separated.

TAMAR CONSOLS SILVER-LEAD MINING COMPANY.

The annual general meeting of shareholders in this company was held at the offices, Salvador House, on Tuesday, the 11th inst.,

P. N. JOHNSON, Esq., F.R.S., in the chair,

The advertisement convening the meeting having been read, Mr. STAINSBY apologised for the absence of the chairman (Mr. Grout), who was absent from illness, but who stated in a note his intention to be at the meeting if possible, though probably not in time to take the chair, when he requested Mr. Johnson to fill. Mr. Stainsby then read the following

DIRECTORS' REPORT.

On the present occasion, the duty of the directors is at once simple, easy, and agreeable; the position of this important property is such as entirely to relieve us from all anxiety as regards the future, for, probably, many years to come. You made the sacrifice, when it was required of you, of dividends cheerfully, when told it was for the then benefit of the mine—such sacrifice enabling us to place the mine on a footing of solidity and permanent prosperity; you now reap your well-merited reward; and your directors rejoy, with much pleasure, the satisfaction of stating this to you, and sincere congratulations, on an event they had been looking forward to with no inconsiderable hope and anxiety. The agents' reports, though short, will give you satisfactory evidence to this extent. Mr. Johnson has also written a report, which will be read to you. To the great, we may say untiring, thoughts and exertions of this gentleman, for the advancement of this property, his brother directors are essentially indebted to him. We are desirous, therefore, that you should know this, and knowing, we are persuaded you will appreciate it as we do. It is not the intention of the directors to present you, on this occasion, with a lengthy report of their own, as those referred to will necessarily be found more attractive and substantially satisfactory. We cannot avoid, however, the pleasure of quoting from Captain Sprague's letter, of the 8th inst., for the purpose of showing you the good results derived from a prudent course of working the mines which, on former occasions we stated to you, and which necessitated the then withholding of dividends. The quotation has reference to the south mine. Captain John Sprague states, in his letter to Mr. Percival N. Johnson:—"The 190, 175, 160, 145, and 136 fm. level ends are presenting every appearance of that good and productive ground we had in all the levels above. In five months the shaft (now 7 fms. below the 190) will be to the 205 fm. level, which will give us 80 fms. of backs in high ground, and calculating this on an average to be 250 fms. long, will make 20,000 fms. of ore ground; which will take some time to work out of the south mine; it may well be said it is in a most prosperous and profitable position. Of the north mine, we beg to state, and we do so with unmixed satisfaction, that it has for some months been paying its way, and we have reason to hope that, when we have next the pleasure of meeting you here, we shall be able to give you satisfactory evidence of its being also a profitable mine—indeed, for the last month, the returns exceed the cost by 150*l.*—that is, the north mine gives a profit to that extent, with every indication of increasing, warranting a belief that each successive month will show better results. This is in itself a matter of no small satisfaction, as hitherto it has been a drain upon the south mine profits; now it not only provides for its own expenses, and relieves the south mine, but it does, in fact, augment the monthly profits."

The accounts will be submitted, which show the following result of the twelve months operations, terminating with the month of August:—

To the credit for ores sold			£21,308	16 8
Less expenditure			17,622	12 11—£3686 3 9
Add balance in hand last meeting				815 14 5
Transferred from the Smelting Company				2880 0 0
Total				£7381 18 2
Which has been thus disposed of:—				
In payment of the twelfth dividend			£2880	0 0
Ditto thirteenth dividend			2880	0 0
Payment to reserve fund			576	0 0—6336 0 0
Leaving balance on hand				£1045 18 2

After payment of every engagement to which the mine is liable, it may not be superfluous to state, that the ores for the following month (September) have been sampled, and are reported to be 103 tons for that month. We have reason to believe these ores will sell certainly at not a less price than those of the previous month; if, then, we assume the cost to be the same, we may calculate on adding to our present available balance of 1045*l.* 18*s.* 2*d.*, the further sum of 650*l.* for profit in the past month. The reserve fund now amounts to 2299*l.* 13*s.* 3*d.*; the conditions express that this fund, after it reaches 3000*l.*, shall there remain permanent. You will bear in mind that 10 per cent. of each dividend is taken to create this fund, which, upon the last two dividends, amounts to 576*l.*—no inconsiderable sum to the debit of profits, in addition to the dividends. This drain for this purpose we shall now very shortly be relieved of, and the amount will swell the future dividends. Your present position is to the end of September, after providing for every engagement, as near as possible, this—

Balance as shown to the end of August	£1045	18 2		
Assumed profit for September	650	0 0	—£1695	18 2
Reserve fund			2299	13 3
Total			£3995	11 5

This is our money position. Then you hold the mines, the machinery of all descriptions, including powerful steam-engines, without any incumberances whatever—all of which are in the best possible working condition. There remains but one other matter for us to glance at, as we have done to those we have already referred to, leaving any fuller explanations which may be required to Mr. Johnson, who has come to town purposely to attend this meeting. The smelting establishment is a most important one, remiss in the highest degree detrimental to its efficient working were it to be subjected in dered still more so from its having exercised so exceedingly beneficial an influence on the permanent success of this mine. This establishment, being one of trade, it would detail to be discussed in public meeting; we, therefore, feel that it would be detrimental to the best interest of the shareholders were we to do more than give an abstract of the accounts, which have been prepared and verified by a professional accountant to the end of June last, at which time the balance of the original capital subscribed, with the 50 per cent. bonus, was paid off; this account to that date shows a nett profit of 10,558*l.* 17*s.* Mr. Johnson, to whom we are also indebted for his supervision of this establishment, has a proposition to make to you; and as we feel every assurance that he has your confidence, as well as our own, we are the more pleased that he lays his plan before you in his own way, premising that he has our concurrence, and will have our support. In conclusion, we beg to express our thanks to the great body of shareholders who have in very trying times reposed confidence in us, and congratulations on our present very comfortable position.

The following statement of accounts was submitted:—

Statement of Accounts for the Twelve Months ending August.

Costs	£17116	19 2	Ores sold	£21298 10 7
Dividends	5760	0 0	Interest and discount	10 6 1
Reserve fund	576	0 0	Tamar Smelting Co.	2880 0 0
Directors	360	0 0	Balance last account	815 14 5
London management	160	0 0		
Petty cash	41	9 9		
Auditors	4	4 0		
Balance	1045	18 2		
Total	£25,004	11 1	Total	£25,004 11 1

A report from Percival N. Johnson, Esq., was also read as follows:—

Ward House, Oct. 10.—It gives me sincere pleasure to be able to report to you that our operations, during the past year, have been attended with success, and that, by a steady course of operation, both at the mine and smelting-works, both these undertakings are in a prosperous and profitable state. The addition of the smelting-works has had, and now has, the effect of insuring the full value of the rich ore produced from the mines; while the profits from smelting the ores produced from other mines form an auxiliary towards not only giving a good interest for the whole capital employed, but enables us to work the ground with that spirit which should always accompany mining enterprise. The mines (to make use of the agent's words) may be said to be in good working order, and no more ore allowed to be broken on tribute than the discoveries on tutwork fully justify. At the south mine we have discovered, and have in prospect, ore to a very large amount; and at the north mine we are likely soon to reap the advantages of perseverance, as upwards of 18 tons of the present sampling is from the 70 fm. level. While we are prosecuting the 80 towards the ore ground going down from the 70, and preparing to sink to the 95, where, from the dip of the strata and ore ground, we hope to find the productive point near to the shaft. I more particularly describe the north mine, to show our future intentions as regards Wheal Hancock. The channel of hard black ground through which we have been working is, with the strata generally in this locality, dipping south-east. In driving the 30 fm. level north towards Wheal Hancock, we did not get through it, and therefore, the bottom levels have been prosecuting with full force; and I consider there can be no doubt, in driving the 70, 80, and 95, north, we shall sooner know the point of operation most likely to be successful north of the black ground, at Wheal Hancock, where the engine and erections are ready to be applied, if our operations from the north mine justify it; but if not, and it be deemed advisable to relinquish this sett, the machinery, which is in good order, would be sold for the benefit of the shareholders, and they may rest satisfied that they have a property likely to be worked to advantage for many years in the other sett. In conclusion, as regards the mining part, and the property, I must beg to observe, that it is to the long-tried perseverance and attention of Captain Sprague, and the other agent, that I feel we are indebted for carrying out the object and bringing the mine to its present state. In the smelting department, I beg to observe, that, in order to give full protection to the mining part of our property, it has been the constant practice with our resident manager, Mr. Smith, and myself to calculate the value of the ore, so as to bid in competition, deducting only the cost of the smelting, or reduction into lead and silver, and thus no profit has arisen in smelting the ore of the company; while, if a corresponding quantity of ore had been smelted by the purchasers of other ores, greater profits would have been the result in the smelting business; but in order to compensate for this, we have enlarged, and are now enlarging, the works, all of which has been paid for up to the present time. I do, however, feel that, if a further capital was raised for this purpose, and the adoption of the desilverising process with poor-class ores, it might be applied to great advantage, and, as a shareholder myself, I should strongly recommend it. Our works are in most excellent order, and full operation, and we now have effective and well-constructed furnaces, of double the number than there were when we purchased the works. It is due to our resident manager, Mr. G. Smith, to attest to his exertions for the welfare and prosperity of the establishment. I cannot conclude without referring to the late dispensation of Providence which has afflicted the men employed at our mines and smelting-works in a greater degree than, with few exceptions, most other districts; attention and assistance has been given them and their families in the hour of need; and I trust that a comparative small outlay has, by showing we have their welfare at heart, made them feel the duty they owe to their employers.

The following report from Capt. Sprague was read to the meeting:—

Tamar Silver-Lead Mines, Oct. 8.—In furnishing you with particulars respecting the last year, I beg to commence with the south mine. The engine-shaft has been sunk 14 fms., which is now down 7 fms. below the 190 fm. level. The different levels have been extended on the course of the lode 248 fms., nearly the whole of which has been productive. In taking the aggregate quantity produced from the different levels in the last 12 months, we might notice the 145 and 135 fm. levels have been most productive, although at the present time the 160 stands most prominent. The 175 is also bordering on the same run of orey ground lately discovered in the level above; and when we consider that we have got this height of ground opened—that is to say, 50 fathoms of backs from the 175 to the 125 fm. level, in rich orey ground—I do not hesitate to say the mine is in a good position. The 190 is driven south 25 fms., and a winze risen in the back 2 fms.; the lode in both these places is producing work of a promising description. With regard to future prospects, I am proud to say that the character of the ground, as well as the returns, plainly shows that the lode gradually improves in depth. At North Tamar, the engine-shaft has been sunk 3½ fms., and is now down 9 ft. below the 60 fm. level, and the different levels driven on the course of the lode 110 fms., the greater part

of which has been done in the 70 fm. level. I would remit on the full value of the ore that all the ground opened in this level has proved to be productive, and if we call mine is, that the 70 has yielded will set at 9s. in 1l. per fm.; one important feature the 80 is driven north on the course more ore than all the upper levels put together level above, and dip of the orey ground of the lode 23 fms., and from the appearance in a short time, to open profitable ground towards the shaft, we may reasonably ex to remark, in viewing both the mines, our pro in this level. In conclusion, I would no doubt in saying that the adventurers are in spects are looking cheering, and I concern. possession of a profitable and l

A discussion then en the advisability of raising a new capital of about 5000l., for the exten of the works of the smelting company. It was shown by Mr. STAINSBY that the sum of 9600l. originally subscribed had been re-turned to the subscribers, with a bonus of 4800l., and that there was now in erections, materials, ores on hand, and cash, a floating capital of above 10,000l.

The CHAIRMAN explained, that Messrs. Eyton (of Flintshire), Michell (of Bristol), and other lead smelters, were adopting the process for desilvering lead, patented some years since by Mr. Patteson, but which patent had now expired; and to enable the Tamar Smelting Company to compete with other establishments, by purchasing ores poor in silver—say, from 8 to 20 ozs. to the ton—to which the process was adopted, but which at present they were not in a position profitably to reduce, he would recommend that a capital of about 5000l. should be raised, of which, if requisite, he should be willing to take one-quarter of the whole himself; it would require about 500l. for reducing pots and apparatus, and it would take the remainder to keep up their stock of ores.

One or two proprietors suggested that a call should be made upon the shareholders, which, however, did not meet with general approval, as it appeared more advisable to have it quite optional whether the present holders should join in the new capital or not. One gentleman proposed the issue of 1500 new shares at 3l., but on taking the sense of the meeting a great majority was in favour of debentures bearing interest, and in the character of preference shares. It was eventually left to the directors to consult with Mr. Plumptre, the solicitor, as to the best means of raising the capital, and on their arriving at a satisfactory conclusion, the proprietors would be again called together, to consider the proposal, and decide upon it. It was elicited that the profits on the smelting department would be so much increased, that should the debentures bear interest even at 7½ per cent., there would be a considerable surplus to swell the dividends.—A vote of thanks was then passed to Mr. Johnson, for his able, anxious, and successful management of the mines and smelting-works; the report and accounts were received, adopted, and ordered to be entered on the minutes, and a vote of thanks having been passed to the chairman and directors, the meeting separated.

TINCROFT MINING COMPANY.

The proceedings of the Tamar Mining Company having terminated, Mr. P STAINSBY stated that he would avail himself of that opportunity of giving many of the proprietors of the Tincroft Company, who he had the pleasure of seeing present, some information of the vast improvements in their property. The pecuniary position of the company showed an available balance of 2421l. 8s. up to the end of July, after providing for every liability. From this amount a dividend had been declared, which would leave a balance of 421l. 8s. in favour of the company. This, however satisfactory, was but a small instalment of future benefits, which would be abundantly evidenced on reference to the tabular statement of ore ground developed, the total value of which was 67,030l.; and although this showed an immensely rich property, they were assured that the agents had underestimated, rather than overstated, the worth of the ore ground, having left (to quote their own statement) a wide margin for something much better in their next report. The detailed statement of ore ground laid open might be recapitulated thus—On East Pool lode, 6100l.; North Tincroft, 17,400l.; Highburrow lode, 30,330l.; Chapple's lode, 11,550l.; south lode, 1650l.—making a total of ore in sight of 67,030l.; beyond which many hundred fathoms of ground remained unexplored.

Mr. STAINSBY then read a most favourable report from Captain Floyd, showing that every part of the mine was richly productive, both for copper and tin, and which concluded by expressing a most unqualified opinion of lasting and lucrative results. A letter, also from Mr. Pike (the purser) was read, of which the following is the substance:—

Tincroft Mines, Oct. 8.—In the table of ore ground laid open we have left a wide margin for something better next time; the estimated value given, however, cannot fail to satisfy our adventurers. At the same time, we have the satisfaction of feeling that we are so much under the mark, that should any adventurer think proper to have the mine inspected, he would have the pleasure of ascertaining that his property was fully worth what we represent it. I am glad to see a dividend announced henceforward; the shareholders may depend upon a regular income from the mine—a position which cannot fail to be highly gratifying to yourself, I mean independently of returns, on your own large interest. It will turn the many long faces, which the long cessation of dividends must have occasioned, into joyous looks.

After which Mr. STAINSBY observed, that the spirit with which the mine was being worked would be evidenced by the number of hands employed underground—331 men and 3 boys.

The shareholders present listened with the most intense interest to the statements made, and received them with the utmost gratification; and after having expressed a warm vote of thanks to Mr. Stainsby, the meeting separated.

TRELEIGH CONSOLS MINING COMPANY.

In our report of the annual meeting of this company, in last week's Journal, we omitted to insert the statement of assets and liabilities, which are of importance, as showing the favourable position of the company's affairs. They are as follows:—

ASSETS.				LIABILITIES.			
Cash and ore bills in hand	£1383	8	6	Acceptances and claims	£640	4	8
Ore sold Sept. 27 (less dues)	445	19	6	Dues owing	66	3	3
Reserve fund	582	14	0	Dividends due	17	0	0
				Contingencies	20	0	0
Total	£2412	2	0	Total	£743	7	11

Showing a balance of assets over liabilities of 1668l. 14s. 1d.

COMBLAWN.—A special general meeting of adventurers was held at the offices, King-street, Cheapside, on Wednesday, the 10th inst.—HENRY MUGGERIDGE, Esq., in the chair.—The principal object of the meeting was to authorise the finance committee to purchase a steam-engine, and a resolution was passed to that effect. The balance-sheet of the mine was presented, showing—Calls, 1478l.; liabilities, 55l. 3s. 10d.; cost at the mine to end of July, and in London to end of September, 1478l. 15s. 4d.; assets, 54l. 8s. 6d.: balance against the mine, 15s. 4d.—The same was passed, subject to the usual audit.

GRAMBLER AND ST. AUBYN.—At a meeting of adventurers held at the mine, on the 9th instant, the accounts were examined and passed, showing—Copper ores sold, May and July, 654l. 12s. 2d.; tin ditto, May and August, 15l. 12s. 1d. (less lords' dues, 61l.)=608l. 18s. 3d.—By labour cost, May, June, July, and August, 409l. 10s. 10d.; merchants' bills, 72l. 15s. 9d.: leaving a profit of 126l. 10s. 8d., and balance in hand of 310l. 15s. 6d.

WHEAL SETON.—At a meeting of adventurers, held at the mine on Monday last, the following accounts for July and August were examined and allowed:—Balance from last account, 525l. 18s. 1d.; ores sold (less dues), 2850l. 5s. 2d. =3376l. 3s. 3d.—To costs and merchants' bills, 2787l. 4s. 9d.: leaving balance in favour of the adventurers, 588l. 18s. 6d.

[From the *Plymouth Journal*.]

BIRCH TOR AND VITIFER MINES.—*Old Vitifer Lode:* We have commenced clearing the old engine-shaft under the adit, and have cleared the adit 5 fms. west of that shaft. The lode in the 20 fm. level, east of the engine-shaft, is 3 ft. wide; there is more tin in the end than there was in the level above, but we are not yet out of the influence of the cross-course. In the 20 fm. level, west of this shaft, we are still in the hard bar of ground met with above, and have some feet more to drive before we shall cut through it. The 10 fm. level east, and the 10 fm. level west of this shaft, are still as good as at my last report, and the stopes are opening very well.—*Birch Tor Lode:* There is no change in this part of the mine since my last.

TAVISTOCK CONSOLS.—The lode in the shaft is 5 ft. wide, carrying two regular walls, and composed of mundic, peach, and spar, but principally of the former—it is a very promising lode.

WHEAL FRANCO.—The lode in the 62 fm. level, east of the engine-shaft, is large and orey, a very promising lode, which has improved since the last monthly report. The lode in the 62 fm. level, west of the said shaft, is producing some ore, but is not yet clear from the influence of the cross course. The lode in Toll's winze, in the bottom of the 47 fm. level, east of the engine-shaft, is of a promising character, and producing some ore, but not rich; this winze is about 10 fms. east of the present end of the 62 fm. level, east of the engine-shaft. The rise in the back of the 32 fm. level, east of Spry's shaft, has been suspended, in consequence of the rise being at present poor; and we have put the men to strip down a piece of lode in the same level, opposite Spry's shaft, there being a large piece of lode standing at this place. There is not much alteration in the tribute department during the last month. The sampling is about 106 tons.

PLYMOUTH WHEAL YEOLAND.—In consequence of the late heavy rains little has been done in the bottom of this mine during the last week. The pitwork has been altered, to prevent the recurrence of a stoppage.

PLYMOUTH WHEAL YEOLAND EAST.—The works here will not be prosecuted with vigour until the adjoining mine has been further worked, which will show at what place it will be advisable to sink the main engine-shaft.

Pontypool.—Four Irishmen were pushing down the red-hot cinders at the Pontnewynydd Iron-Works, when the surface on which they stood gave way, and they were precipitated into the fiery heap. They were all much injured, but escaped with their lives.

Merthyr Tydvil.—A man was killed, on Monday last, in one of Mr. Crawshay's pits, by a fall of roof.

Hartlepool Railway.—James Lonsdale, a pitman, while in a state of intoxication, was knocked down by a train near the Wingate station, and so much injured that he died.

HOPE FOR BLACKWALL SHAREHOLDERS.—We understand that the alteration in the working of the London and Blackwall Railway, by the substitution of locomotives for the rope, has resulted in a saving of 50 per cent. in the working expenses, the cost of the rope having been 1s. 10d. per mile, and the locomotives about 11d. On the Bow branch, which, as our readers are aware, is being worked by one of Messrs. England's new engines, the working expenses amount only to about *fourpence per mile.*—*Railway Times.*

THE IRON TRADE IN AMERICA.

The *North American*, of Philadelphia, contains a statement showing the effect of the Tariff of 1846 on the iron interests of Pennsylvania. This journal is the champion of "protection." It appears that the quantity of iron of the different kinds which passed eastward through the Cheaspeake and Delaware Canal during two similar periods of the past and present year—from the opening of the navigation to the 1st September—is as follows:—

	Wrought & Railroad.	Blooms.	Pig Metal.
From opening of navigation to Sept. 1, 1848 *Lbs.*	11,142,712	1,741,505	51,372,790
Same period of 1849	2,722,315	2,225,892	27,764,348
Falling off ... *Lbs.*	8,420,397	—	23,608,442
Increase	—	514,387	—

The diminution on pig-iron coming through the canal this year, as compared with the last, is 46 per cent. upon the whole quantity, while the diminution on wrought and railroad iron reaches 75 per cent. Reducing the diminished product to tons, the absolute decrease in wrought and railroad iron, is 3759 tons; and in pig-iron, 10,539 tons; while, the gain in blooms, is only 229 tons; or, taking all the kinds together, the net decrease is—14,069 tons. The value of the above-mentioned pig metal was $368,865. The value of the two kinds together amounted to the gross sum of $622,597; deducting from this the blooms, we have, as the net loss the sum of $607,140, all which is the loss on that part of the iron trade which comes through the Chesapeake and Delaware Canal. Such are some of the facts put forth as illustrating the pernicious influence of the tariff of 1846 on the Pennsylvania iron interest.

The directors of the Hudson River Railroad Company have paid to Peter Cooper, of Tranton, New Jersey, the bonus of $54,000 for permission to retire from a contract made for $67½ a ton. English rails are now offered in the market in any quantities at $40 per ton. Against these gloomy facts, however, we have to place cheering news from the iron business in the west.

The *Louisville* (Kentucky) *Journal* says:—"On the Cumberland river success in the iron business has been striking. At one of the large establishments there, and since 1835, the average dividends have been 15 per cent. per annum on the capital invested, while in the meantime over $260,000 has been lost by it in bad debts. It is strange that men of energy should pass by the ironstone of Hanging Rock and Eddyville, to seek fortunes on the Sacramento; and it is equally strange that part of the energy and capital now employed in the west, in the precarious provision and grain business, does not find employment and certain profits in manufactures. In the *Railroad Journal* of the 4th inst., Professor Hodge gives the respective prices of ore and charcoal at 31 of the Hematite Iron Furnaces of Massachusetts, Connecticut, and New York. We find the average to be thus—charcoal (per bushel), 7½ cents; ore (per ton), $2 74 cents.; cost of ore and coal to the ton of iron, $14 29 cents. The average cost of iron from these furnaces, delivered at New York and Boston markets, is—hot blast, per ton, $25; cold blast (per ton) $30; worth from $5 to $7 per ton more than Scotch pig, which is now quoted in the *New York Price Current*, at $18. It is to be remarked, however, that the rent or ore duty at some of the mines is very heavy—at Salisbury, North and South Canaan, being $1 25 cents. per ton of ore. The cost of delivering is also heavy, ranging from many of the furnaces from $2 50 cents. to $4 50 cents. per ton. But it is high time for the west to throw aside eastern guide books and tables on these matters. Our ores can be had for a few dollars per acres, and our ores and our charcoal cost less than one-half of the eastern rates. When iron is made, we have navigable rivers on which it can be cheaply transported from the producer to the customer. It has been resolved by the ironmasters of Pennsylvania to hold a general convention of the furnace men of Ohio, Kentucky, and Pennsylvania, on the 21st November next, to petition Congress for protection against their foreign competitors.

New Patents.

LIST OF PATENTS GRANTED DURING THE PAST WEEK.

W. Jamieson, Ashton-under-Lyne, Lancaster, machine maker, for certain improvements in looms for weaving.

C. Attwood, Esq., of Tow-law Iron-Works, near Darlington, Durham, for an improvement or improvements in the manufacture of iron.

W. E. Newton, Chancery-lane, civil engineer, for improvements in machinery for planing, tongueing, and grooving boards or planks. (Being a communication).

A. V. Newton, Chancery-lane, mechanical draughtsman, for improvements in the manufacture of pipes or tubes. (Being a communication.)

H. Watson, Newcastle-upon-Tyne, brass founder, for improvements in valves and cocks.

R. Larkin, Ardwick, Lancaster, machinist, and W. H. Rhodes, mechanic, Openshaw, Lancaster, for certain improvements in machinery, and for preparing, spinning, doubling, and weaving cotton, and other fibrous substances.

Peter Armand le Comte de Fontainemoreau, South-street, Finsbury, for improvements in spinning fibrous substances. (Being a communication).

J. Lowe, Salford, Lancaster, surveyor, for certain improvements in grates or grids applicable to sewers, drains, and other similar purposes.

M. Titch, Chelmsford, Essex, patent salt manufacturer, for improvements in baking bread, biscuits, and other matters, which improvements are applicable for drying goods.

C. Bonell, engineer, Kempsey, Worcester, for certain improvements in rotary engines to be worked by steam or other means, and also in the construction of carriages, vessels, or other vehicles to be worked or propelled by the said improvements in rotary engines or other motive power, and for the machinery to be connected therewith.

J. Banister, Birmingham, manufacturer for a certain improvement or certain improvements in tubes for locomotive and other boilers.

G. A. Ringelson, Essex-street, Strand, Middlesex, chemist, for a composition or preparation for destroying vermin.

C. Rowley, Newhall-street, Birmingham, button manufacturer, for certain improvements in apparatus for weaving, and in articles to be attached to dresses.

J. Bury, Torkington, Lancaster, railway contractor, for certain improvements in the construction of chairs for railways.

J. Christophers, of Heavitree, Devon, formerly merchant and shipowner, for improvements in naval architecture.

T. Lightfoot, Broad Oak, Lancaster, chemist, improvements in printing cotton fabrics.

W. S. Gillett, Esq., Wilton-street, Grosvenor-place, for improvements in packing pistons, stuffing-boxes, slides, and other parts of machinery, and in forming bearings, and in making cylinders and other forms of metal.

C. W. Finzel, Bristol, sugar refiner, for improvements in the processes and machinery employed in and applicable to the manufacture of sugar.

J. Mercer, Oakenham, Lancaster, gentleman, and W. Blythe, Holland Bank, in the same county, manufacturing chemist, for improvements in certain materials to be used in the process of dyeing and printing.

J. Johnson, Huddersfield, York, bricklayer, and Joe Cliffe, of the same place, ironfounder, for improvements in furnaces, or in the means of consuming smoke.

Jules le Bastier, Paris, gentleman, for certain improvements in machinery or apparatus for printing.

SPECIFICATIONS ENROLLED DURING THE PAST WEEK.

W. Morgan, Liverpool, wire-fastened circular brush for cleaning boilers and other tubes.
I. Green, Victoria-place, Euston-square, wind guard.
G. A. Copeland, Pendennis Castle, Falmouth, safety cartridge for blasting purposes, in mines, quarries and other situations.
J. Hynam, Princes-square, Finsbury, metal box with rounded corners at ends and bottom, to be opened by a horizontal groove slide (inverted).
W. Gray, C. Christopher, and T. Barratt, Liverpool, cooking apparatus for ships.
J. Townsend, Birmingham, improvements on or addition to valves for air-guns.
W. Thicthener, Union-terrace, Bagnigge-wells-road, solid impulse lever.
J. Morland, and Son, Eastcheape, floriform parasol,—*Mechanics' Magazine.*

PROFITS ON GAS MANUFACTURE.—A statistical return of the outlay and profits of the Durham Gas Company shows that their gains for the year 1848 were at the rate of 27½ per cent.

BISCUITS MADE BY MACHINERY.—If our forefathers had been told that before they had lain long in their graves a machine would be invented by which flour and water could be mixed together at one end, and brought out at the other ready baked biscuits, they would have doubted the sanity of the person addressing them. Yet, strange as it may seem, this is a task now all but accomplished, and in operation every working-day at the extensive ship-bread bakery of Mr. Thomas Harrison, Mersey-street, late of Wapping. Various machines are now used for the baking of ship and other biscuits, but the one patented by Mr. Harrison differs from those hitherto in use, in size, in utility, and in adaptation for the firing of the bread, of the hot-air principle, now the property of the Patent Desiccating Company. The flour and water in proper proportions are placed in a cylinder, and the first operation of thoroughly mixing is performed by arms inside. On leaving the cylinder, the dough is kneaded by means of a large iron cylinder, under which it is passed several times. The required thickness is attained on passing beneath a smaller cylinder. The dough, spread like a large sheet, passes along an endless cloth, the machinery moving at each stroke the precise width of a biscuit. As the dough passes along, by the rising and falling of a nicely-adjusted piece of mechanism, the biscuits are cut into shape and receive the stamp of the patentee. The biscuits are not circular, but have six sides, and, therefore, there is not, in cutting out, any waste of dough, except a small portion at each end. Passing along the endless cloth, the biscuits are conducted to the mouth of the oven, where they are received on what may be called, for familiar illustration, an endless gridiron, which, as machine moves, draws in the biscuits in a few seconds. Each oven is 4½ feet in width, and 26½ feet in length. There are four ovens, one above another, and all fed from the same furnace with hot water. The mixing of the flour and water occupies about twelve minutes, the kneading five or six, and the firing half an hour. As each oven contains 650 biscuits, and may be filled within a few minutes of each other, there is no difficulty in producing from flour and water no fewer than 2600 biscuits in an hour, or nearly a ton of ship biscuits every two hours. The biscuits, too, are of excellent quality—beautifully crisp and sweet. It is difficult to convey to the reader a correct idea of the operation of so ingenious and useful a piece of machinery, but it is so exceedingly clever that we would advise the curious to visit the establishment. Messrs. W. and M. Scott, of the Tranmere Foundry, are the manufacturers.—*Liverpool Mail.*

CURRENT PRICE OF GOLD AND SILVER.

Foreign gold, in bars .... per oz.	£3	17	9	New dollars .... per oz.	£0	4	9½
" Portugal pieces....	0	0	0	Silver in bars (standard)	0	4	11½

LATEST CURRENT PRICES OF METALS.

LONDON, OCTOBER 12, 1849.

ENGLISH IRON. a	per ton.
Bar, bolt, & square, London	£5 15 0—6
Nail rods	6 12 6—7
Hoops	7 15 0—8
Sheets (singles)	8 10—8 15
Bars, at Cardiff & Newport	5 0—5 5
Refined metal, Wales*	3 10—3 15
Do. anthracite*	3 15 0
Pigs in Wales	3 5—4 0
Do. do. forge	2 10—3 0
Do., No. 1, Clyde ... net cash	2 2—2 4
Blewitt's Patent Refined Iron for bars, rails, &c., free on board at Newport*	3 15 0
Do., do., for tin-plates, boiler plates, &c., ditto	4 10 0
Stirling's Patent Toughened Pigs in Glasgow	2 12—2 14
Stirling's Patent Toughened Pigs in Wales	3 5—3 15
Staffordshire bars, at the works	6 10
Pigs, in Staffordshire	—
Rails	5 0—5 2 6
Chairs	4 0 0
FOREIGN IRON. b	
Swedish	11 10 0—12
CCND	17 0 0
PSI	—
Gourieff	—
Archangel	—
FOREIGN STEEL. c	
Swedish keg	14 15—15 0
Ditto faggot	15 0—15 5
ENGLISH COPPER. d	
Sheets, sheathing, & bolts, p. lb.	0 0 9½
Tough cake ... per ton	84 0 0
Tile	£83 0 0
Old copper e ... per lb.	8½d 8¾d
Yellow Metal Sheathing	8d
FOREIGN COPPER. f	
South American, in bond	—
ENGLISH LEAD. g	
Pig ... per ton	15 15 0
Sheet	16 15 0
Red lead	17 10 0
White ditto	22 0 0
Patent shot	19 15 0
FOREIGN LEAD. h	
Spanish, in bond	15 0—15 10
American ditto	—
ENGLISH TIN. i	
Block ... per cwt.	3 13 0
Bar	3 14 0
Refined	3 19 0
FOREIGN TIN k	
Banca, in bond	3 12 0
Straits	3 6—3 7
Peruvian (6 mo 2½ p. ct. dis.)	3 6 6
TIN-PLATES. l	
IC Coke ... per box	1 7 6—1 8
IC Charcoal	1 11—1 12
IX ditto	1 17 0
SPELTER. m	
Plates, warehoused ... per ton	14 10—14 15
Ditto, to arrive	14 5—14 10
ZINC. n	
English sheet ... per ton	20 10—21
QUICKSILVER o ... per lb.	2s. 11d. 3s

Terms.—a, 6 months, or 2½ per cent. dis.; b, ditto; c, ditto; d, 6 months, or 3 per ct. dis; e, 6 months, or 2½ per cent. dis.; f, ditto; g, ditto; h, ditto; i, ditto; k, net cash; l, 6 months, or 3 p. ct. dis.; m, net cash; n, 3 months, or 1½ p. c. dis.; o, ditto, 1½ dis.

* Cold-blast, free on board in Wales.

REMARKS.—We have no change to notice in the metal market this week. At the quarterly meeting of the ironmasters, held at Birmingham yesterday, it was resolved to maintain present prices, which are—for bars, 6l. to 6l. 10s.; hoops, 7l., and sheets, 7l. 10s. —delivered at the works. Scotch pig-iron continues dull of sale, and but few transactions have taken place since our last. We quote mixed Nos. 41s. 6d., and No. 1, 42s.—net cash, free on board at Glasgow.

GLASGOW, OCT. 11.—The business during the week has been on the same limited scale as for some time past, and prices have undergone little change, but the tendency, on the whole, has rather been downcast. We quote the price of mixed Nos. at 41s. 6d. cash.

EXPORTATION OF THE PRECIOUS METALS.—The following are the official returns of the exports of gold and silver from the port of London for the last week:—Silver coin to Belgium, 82,000 ounces; ditto to Dunkirk, 188,000—Silver bars to ditto, 14,000; ditto to Belgium, 55,992—Gold coin to Mauritius, 237.

EXPORTS OF METALS TO ALL INDIA FROM LONDON AND LIVERPOOL,

FOR THE FIRST NINE MONTHS OF 1848 AND 1849.

Metals.		1849.	1848.	In. in 1849.	Dec. in 1849.
Spelter	Tons	3210	2579	631	—
Copper		4684	2584	2101	—
Iron, British		25844	15501	10343	—
Ditto, Foreign		1634	203	1431	—
Tin-plates	Boxes	11668	3181	8487	—
Lead	Tons	2798	591	2207	—
Steel		755	132	623	—
Quicksilver	Bottles	247	25	222	—

IRONMASTERS' QUARTERLY MEETINGS.

The first of the October quarterly meetings of the ironmasters of South Staffordshire, Shropshire, and Worcestershire, was held at Walsall on Tuesday, and the second at Wolverhampton, on Wednesday. That at Walsall is usually considered comparatively unimportant, the far greater amount of business being transacted at the subsequent meetings held at Wolverhampton, Birmingham, and Dudley. There was an average attendance of iron and coalmasters on Wednesday, and the settlements were understood to be generally satisfactory.

The great staple manufacture of the district was, however, represented to be not in the most satisfactory condition. The small makers are in pretty full work, but in the largest iron-works there is not the same activity. The demand is principally for home consumption—for iron required in the manufacture of articles for domestic use. Of heavy orders there are comparatively few, it being notorious that there are many contracts on hand, particularly for railways, which cannot, or will not, if ever—owing to the suspension of many railway projects—be completed for many months to come.

It has been deemed advisable to abide by the nominal price fixed upon at the preliminary meeting held a fortnight ago.

Many of the thin-coalmen, encouraged by the acquiescence of some masters in the neighbourhood of Oldbury, are still standing out for an increase of wages. It appears quite certain, from statements made by all parties, that the demand for and present price of iron will not justify such an advance; but, after the indecision and vacillation manifested by certain small firms, it is impossible to say whether or not the colliers will be successful in their present attempt.

The most important quarterly meeting of the ironmasters of South Staffordshire and adjacent counties was held in the Town Hall of Birmingham on Thursday, at which were present representatives not only of the principal firms of the district, but also from first-rate houses in London, Liverpool, Wales, and other parts of the kingdom.

The above report of the Wolverhampton meeting was, with few emendations, confirmed. Some additional particulars with regard to the exact position of the iron trade may, however, be communicated.

The great firms of the Midland iron district are not in possession of a superabundance of orders. The demand upon them is limited in comparison with former times; and this is somewhat remarkable, considering that merchants' stocks (as well as stocks at the principal iron-works) are at the present time unusually low. One great drawback upon the briskness of the iron manufacture, as above alluded to, is the failure of various railway companies to give out contracts into which they have entered, and for the fulfilment of which they are legally liable. The reason of this is very palpable in the districts. There are in the immediate vicinity of Dudley and Wolverhampton great railway lines incomplete, and at a dead stand-still; and until the directors of these undertakings can obtain cash, or credit (both now extremely scarce), there is little hope of the fulfilment of their several contracts for rails; but, although the iron may not be made or supplied, the ironmasters are perfectly satisfied with the solvency and honour of the boards with which they have contracted, and that ultimately, if not speedily, payment will be made, if not for the supply of material, at least for the breach of contract.

The prices last quoted were fully maintained, and there was no tendency towards a decline. There was no alteration in pigs, the prices remaining the same as stated at the preliminary meeting.

The notice of a strike issued by the thin-coal men in the neighbourhood of Wolverhampton expires on Saturday night. Their demand is an advance of 9d. per day—no small sum, considering the serious effect it would necessarily have upon the interests of the iron manufacturer. In the neighbourhood of Oldbury (not West Bromwich) this demand has been allowed, and upon the strength of this concession the colliers in the vicinity of Bilston and Wolverhampton are resolutely determined to obtain the same terms. There has not, as yet, been any meeting of the Wolverhampton masters, but we believe that, to a man, they are resolved to resist what they consider an unwarrantable attempt on the part of the colliers. They assert that the state of the iron trade, and the cheapness of provisions, do not justify them, under circumstances, in granting so large an increase of wages; and there is reason to believe, from past experience, that the masters of Wolverhampton are of stronger nerve than those of Oldbury. Their stocks of limestone and coal are, moreover, represented to be sufficient to furnish them with ample supplies during a long siege.

The meeting at Dudley this evening is looked forward to by the iron trade with much interest, it being the night on which the colliers' notice of suspension of labour expires. It is, however, not expected to have any injurious effect on the prices as first fixed at the recent meetings of the ironmasters.

The returns of the exports of metals and metallic manufactures are highly encouraging. The following are for the month ending Sept. 5, 1849, and for the corresponding month of 1848. The official statement also shows that, for the eight months preceding, the exports were considerably greater than for the corresponding period of 1848:—

	1848.	1849.	Increase.
Glass	£ 18,248	£ 21,247	£ 2,999
Hardware and cutlery	159,795	224,405	64,610
Machinery	99,421	106,529	7,108
Iron and steel	437,172	548,279	61,107
Copper and Brass	106,106	202,297	96,190
Lead	12,127	44,469	32,342
Tin	29,281	62,772	32,491

RAILWAY IN SOUTH AUSTRALIA.—We very recently alluded to the projected plan of constructing a railway from the city of Adelaide to the Port, the desireableness and advantages of which were so apparent, that two distinct companies had been formed, the one in this country, the other in Adelaide, to carry out that object, and we expressed our fears that the undertaking might be paralysed, or, perhaps, altogether fall to the ground, by the opposition engendered by two rival interests, in their endeavours to accomplish the same object. According to the last accounts received from Adelaide, it is gratifying to learn that, whatever difficulties might at first have been supposed to exist, in reference to the proposed junction of the London company with the committee of the Adelaide Railway Company, they, by mutual and prudent concessions, were likely to be speedily and satisfactorily removed. The agents of the former company had arrived in Adelaide, and a correspondence had been opened between the two parties, both of whom are so fully convinced of its being their mutual interest to unite, that all that then remained to be done was the adjustment of the preliminaries, which the next account from thence will no doubt bring us. If one-fifth of the capital—say, about 50,000l.—is to be absolutely reserved for the colonists to subscribe, and they are to have a share in the management, as is reasonable should be the case, nothing more is to be desired, and this we understand will be conceded. In the Adelaide Railway Company, upwards of 4000 5l. shares have been allotted, and the deposits upon them paid up; but these could easily be cancelled, or converted into 20l. shares of the London company. An application, we understand, will be made to the legislative council for authority to take such preliminary steps as may be required with a view to active operations as soon as the winter has closed; and it is to be hoped that the joint efforts of both parties will be directed towards hastening forward what is generally believed will be for the common good. It is not only a desirable acquisition to the commercial facilities of the place, but under economical and judicious management, it holds out every prospect of becoming a profitable undertaking, or the shareholders, as well as a lasting benefit both to the city and to the port of Adelaide.

Current Prices of Stocks, Shares, & Metals.

STOCK EXCHANGE, Saturday morning Eleven o'clock.

Bank Stock, 7 per Cent., 196	Belgian, 4½ per Cent., 87
3 per Cent. Reduced Ann., 9⅞ 1	Dutch, 2½ per Cent., 54
3 per Cent. Consols Ann., 92½ ⅝ ¼	Brazilian, 5 per Cent., 84 3
3¼ per Cent. Ann., 92¼ ⅝	Chilian, 6 per Cent., —
Long Annuities, 8⅝	Mexican 5 per Cent., ex Coup., 26⅝ ½
India Stock, 10½ per Cent., 257	Russian, 5 per Cent., 107
3 per Cent. Consols for Acc. 92½ ⅝	Spanish, 5 per Cent, 16⅝ 16
Excheq. Bills, 1000*l.*, 1½d. 41 45 pm.	Ditto 3 per Cent., 34½

Mines.—Although a fair proportion of business has been transacted since our last, many buyers have not been able to have their orders completed within the period originally agreed upon.

South Frances, South Basset, Condurrow, Treviskey and Barrier, Trelawny, and other shares, have been in demand. In Wheal Adams, a very considerable improvement has taken place; the discovery is represented to be worth from 70*l.* to 80*l.* per fm. There have been inquiries for Birch Tor shares, both here and in the country, at about our present quotations, and some business done in Wheal Franco.

Shares in the following mines have changed hands during the week:—Devon Great Consols, East Wheal Rose, Bedford United, Stray Park, Trelawny, Trehane, Treviskey and Barrier, Tincroft, Birch Tor and Vitifer, Tamar Consols, Wheal Franco, Kingsett and Bedford, Treleigh Consols, South Tamar, South Frances, Trethellan, West Caradon, West Wheal Tolgus, West Wheal Treasury.

Capt. Puckey, of Fowey Consols Mine, having, at the request of the directors, inspected Hawkmoor Mine, has forwarded a highly favourable report, which will be found among our mining intelligence. He states it is very rare to find so good a course of copper ore so near where any former company ceased working, as they have in the 20 fm. level; he was not, however, altogether surprised, as the appearances in the 10 fm. level indicate something good below. He considers the locality good—having Devon Great Consols to the north, Bedford United to the east, with some of the lodes running through Hawkmoor, and Gunnis Lake Mine to the south. Taking all things into consideration, the water-power at hand, and the very favourable indications, he considers it a valuable mine, and, with spirited development, highly probable to make a permanently profitable one.

Grambler and St. Aubyn account meeting was held on the 9th inst., when a profit of 126*l.* 10s. 8d. was found for the four months ending August, which, with the balance from last account, leaves to credit 437*l.* 6s. 2d. We understand from our local correspondence, that a valuable branch of yellow copper ore has been cut in these mines from 1 to 2 feet wide, on the course of the eastern drivings.

The usual quarterly meeting of the Callington Mines Company was held on Wednesday; the financial statement showed a balance of 1639*l.* 2s. 11d. against the mine, less June subsist of 108*l.* 10s. The Kelly Bray Mine, which, it appears, is worked separately, sustained a loss on the three months' working of 729*l.* 7s. 7d., which, with a balance brought from last account, taking credit for the twenty-first instalment of 2000*l.*, leaves a balance against the mine of 1761*l.* 19s. 6d.

At the Tamar meeting, the accounts showed amount of silver-lead ores sold, 21,308*l.* 16s. 8d. for the year, showing profit of 3686*l.* 3s. 9d., which, with other receipts, made a balance of 7381*l.* 18s. 2d., out of which two dividends have been paid, amounting to 5760*l.*; to the reserve fund, 576*l.*, leaving in hand 1045*l.* 18s. 2d. The report will be found highly satisfactory.

By a statement made by Mr. Stainsby, after the Tamar meeting, respecting the position of the Tincroft property, it appears highly favourable for permanently profitable results, there being ore in sight to the value of upwards of 67,000*l*, with many hundreds of fathoms of ground still unexplored. The directors, at their meeting on the 4th instant, declared a dividend of 7s. per share, being 5 per cent. on the paid-up capital.

At the Treleigh meeting, noticed last week, we omitted the assets and liabilities; they will be found in another column—showing a balance in favour of assets of 1668*l.* 14s. 1d.

At the Comblawn meeting, the accounts showed a balance against the mine of 15s. 4d. A resolution was passed for the purchase of a steam-engine.

At the Wheal Seton two-monthly meeting, the accounts showed—Ores sold (less dues), 2850*l.* 5s. 2d: leaving balance in favour of adventurers, 588*l.* 18s. 6d

In foreign mines, the principal transactions have been in United Mexicans St. John del Rey, Imperial Brazilian, Copiapo, and National Brazilian, and a few shares in Guadalcanal and Australians have changed hands.

By letters, received from the Linares Mines, dated the 3d October, we learn that the engine commenced working on the 1st, and, up to date, was found to perform its duty well.

HULL, Thursday.—The share market has shown no signs of improvement since we wrote last, and there is scarcely any business passing.

North British Australasian Company.—It was reported that the Burra Burra lode had been discovered at this company's adjoining mine (the Bon-Accord); but, by our advices from Adelaide, we learn that no new mineral discovery of importance had been made in the settlement up to the 28th May.

Valley of Loetchen Mining and Smelting Company.—The disputed right to this property is not yet definitively settled—the defendants having appealed to the Council of State against the decision of the Civil Judge of Sion. As the State were the original grantees of the mine, and as Mr. Blanch, the plaintiff, has obtained his concession under the guarantee of the mining laws, there is no doubt the cause will be referred from them again to the Civil Judge at Sion, to be finally adjudicated according to those laws.

Contract for Coal in France.—The contract for the supply of 1910 chaldrons of coal for the small forges, and 764 for the furnaces at the dockyards and naval establishments of the French republic at Cherbourg, has been taken by the house of the Messrs. Llais, Brothers, of that port, at the rate of 19s. 11d. the chaldron of 36 bushels. The firm of H. Worms, of Paris, offered to take the contract for 1*l.* 0s. 2½d. The highest offer was that of the Messrs. Jallan, of Brest, at 1*l.* 5s. 7½d.

Combination of Colliers.—At the delegate meeting, on Saturday last, for the two counties of Northumberland and Durham, it was stated, that nearly 2000 additional names had been added to the union in a fortnight.

Opening of the South Yorkshire Railway.—Capt. Wynn, the Government inspector, has been over this company's line from Swinton to Doncaster, 10 miles, communicating with the Great Northern Railway at the latter place, and connecting, by means of it, the metropolis direct with the great Yorkshire coal-fields. It is to be opened this week.

Opening of the Windsor Railway.—The opening of the Great Western Railway Company's extension line to Windsor took place on Monday last, having been approved by the Railway Commissioners on Saturday. The line proceeds out of Slough through a cutting of a quarter of a mile in length. It then runs for nearly the remainder of the way, or to within about a quarter of a mile of Windsor, on an embankment, where an elegant viaduct carries it, by a continuous curve, into the centre of the town. This viaduct is between 5000 and 6000 ft. long, and in the middle of it is a bridge of novel construction, designed by Mr. Brunel, with a span over the Thames of 187 ft., so as to give, in conformity with the requirements of the Admiralty, headway enough to allow of vessels passing in sail. The principle of this bridge, known as that of the arch and tie, the ends of the arch being connected by strong metal ties, has been severely tested, and has been found to exhibit no perceptible deflection; its foundations are on hard gravel, below the bed of the river. The station at Windsor is in the usually tasteful style of those on other parts of the line. It abuts close on the High-street, is 230 ft. long, with an iron roof, 70 ft. span. The ornamental details are not yet completed. In addition to the new line, the company have constructed a diverging branch, by which Royal and express trains can run up to Windsor, without being detained at Slough.

Gutta Percha.—Yesterday, the ship *Bangalore*, 500 tons burden, arrived in the London Docks from the East Indies, with an entire cargo of gutta percha, being the first vessel that has been entirely chartered for the conveyance of that material, now, from its multifarious uses, a staple article of commerce.

Machines for Joinery Work.—We inspected, yesterday, at Messrs. E. T. Bellhouse and Co.'s Eagle Foundry, a new machine for morticing wood. This machine, though recently introduced into this country, where it has been patented by Mr. William Furness, of Liverpool, has been used for the last 15 years in the United States of America, where it was invented by a Mr. J. A. Fay. It is on the principle of the slotting machine for iron, but with a power of adjustment of the point of the tool which enables a great variety of work to be done by it. The chisels employed are peculiar in shape, not being solid like the ordinary mortice chisels, but flat, like the common joiner's chisels, with the edges turned up at right angles, so that the chips are drawn out of the mortice, after the hole has been cut. The machine can be used with any size of chisel from ⅛ in. up to 2 in.; it will also set out and mortice naves for wheels not exceeding 10 by 15 in. Pins and dowels are made by it in a quick and perfect manner. It can be made to operate either by foot or steam-power, and one machine will perform the work of eight men. The cost of the machine is about 20*l.* The inventor of this machine has also invented a machine to make tenons, and execute rebating, sash scribing, and boring in any kind of wood. This machine has now been introduced into England, and patented by Mr. William Furness.—*Manchester Guardian.*

THAMES TUNNEL COMPANY

The number of passengers who passed through the Tunnel in the week ending Oct. 6, was—No. of passengers, 11,501. -Amount of money, £47 18s. 5d.

PRICES OF MINING SHARES.

BRITISH MINES.

Shares.	Company.	Paid.	Price.
1000	Abergwessin	9	4
1024	Alfred Consols	8¾	7½ 1⅞
1000	Antimony&Silver-Lead	5	—
1024	AshburtonUnited Mines	8¼	12
1624	Balleswidden	9	16
128	Balnoon Consols	42½	50
1000	Barristown	5¼	1½ 2
3650	Bawden	¼	½ ¾
4000	Bedford	2½	3¼ 3¾
1280	Birch Tor & Vitifer	10½	6½ 7
8000	Blaenavon	50	10
5000	Blisland Consols	1	5½
100	Botallack	182	25
120	Brewer	5	5
256	Brimpts Tin	2½	3
10000	British Iron, New, regis.	12	8
—	Ditto ditto, scrip	10	10
2400	Bryn-ar-lan	2	6
128	Budnick Consols	52½	10
1000	Callington	22	5 6
1000	Camborne Consols	7	4½ 6½
20000	Cameron's Steam Coal	7	1
256	Caradon Copper Mine	9½	1½
256	Caradon Mines	22½	10
256	Caradon United	24	5 8
256	Caradon Wh. Hooper	21	4½
1000	Carn Brea	15	110
3000	Carthew Consols	1½	6
114	Charlestown	220	—
500	Comblawn	5¼	4½
128	Comfort	45	65 70
256	Condurrow	20	65 70
2560	Cook's Kitchen	14	2½ 3
1000	Coombe Valley Quarry	4½	5
1000	Copper Bottom	1¼	6½
900	Court Grange	5	10
212	Craddock Moor	23½	5
128	Creeg Braws	120	30
500	Cubert Mine	12½	—
1000	Cwm Erfin	3½	3 3½
7100	Derwent	8½	5
845	Devon&CourtenayCon.	7¾	1½ 2
1024	Devon Great Consols	1	200
1000	Dhurode	2	5
182	Dolcoath	30	15
2560	Drake Walls	5½	3
10000	Durham County Coal	45	9
3000	Dyfngwm	10	10 12
512	East Alvenney	5¼	6
2500	East Birch Tor	3	3
1024	East Buller	1	4
112	East Caradon	47	47
2048	East Crowndale	6¼	4
128	East Pool	15	60
9000	East Tamar Consols	¾	⅝ ¾
94	East Wheal Crofty	125	65 70
128	East Wheal Rose	50	630 650
—	EastofScotland Iron Co.	5	1¾
123	East Wheal Seton	14	10
1280	Esgair Llee	1½	4 4½
248	Exmoor Wh. Eliza	6	6
494	Fowey Consols	40	45
1024	Freidd Llwydd Mines	1½	3½
4000	Gen. Mining Co. for Irel.	1½	1¼
256	Gonamena	44½	16
128	Goonvrea	4	2
256	Grambler & St. Aubyn	80	10 12
100	Great Consols	1000	210 220
512	Gt. Wh. Rough Tor Con.	24½	18 20
6000	Growa Slate Company	5	5
6000	Heignston Down Con.	1½	¾
1500	Hennock Silver-Lead	1s	2
4500	Hennock Iron & Tin	21s	21s
256	Herodsfoot	27	12 13
10000	Hibernian	12½	1½
1000	Holmbush	22	6
1024	Kingsett and Bedford	1½	3¾ 4¼
787	Kirkcudbrightshire	8½	2½
2048	Lamherooe Wh. Maria	8	2½
252	Lanarth Consols	—	4
128	Lelant Consols	90	40
160	Levant	—	225
1000	Lewis	17	9½ 10
1000	Llwynmalees	8	5 5½
3600	Llynvi Iron	50	50
253	Lostwithiel Consols	23	10
6000	Marke Valley	10	¾ 1
5000	Mendip Hills	3½	2 2½
128	Metha	34	—
20000	Mining Co. of Ireland	7	4
1280	Nant-y-cria	5	5
256	New East Crowndale	3¾	2½
100	North Pool	45	530
140	North Roskear	5½	160
262	North Wh. Leisure	1½	2
256	North Wheal Basset	10	10 12
15000	Northern Coal Co.	23	2
12	Old Wheal Prosper	—	75
128	Par Consols	55¾	650
1248	Pengelly Tin	1	1
8000	Pennant & Craigwen	2½	2
1024	Penzance Consols	22s 3d.	3
512	Plymouth Wh. Yeoland	6½	6
200	Polsaith Consols	5½	4¾
2500	Rhoswiddol&Bacheiddon	10	10
10000	Rhymney Iron	50	13
10000	Ditto New	7	6¾
1000	Rosewall Hill	1	5

BRITISH MINES—*continued.*

Shares.	Company.	Paid.	Price.
256	Rosewarva Mines	—	12
2048	Runnaford Coombe Tin	¾	5
9000	South Tamar	½	1½ ¾
128	South Caradon	5	300 350
1100	South Dolcoath	5	¾ 1
256	Sth. Friendsh. Wh.Ann	30	28 30
256	South Molton	5	13
256	South Tolgus	16	55 60
256	South Trelawny	28½	5
2000	South Wales Mining Co.	¾	1 1½
128	South Wheal Basset	20½	350 380
124	South Wh. Frances	160	265
256	South Wh. Josiah	1½	5 6
1000	South Wh. Maria	2½	1½
10000	Southern&Western, Irish	2½	4
280	Spearne Moor	30	40
94	St. Ives Consols	—	80
128	St. Michael Penkivel	5	10½
999	St. Minver Consols	1	6
1000	Stray Park	43	20 21
9600	Tamar Consols	3	7½ 8
10240	Tavistock Consols	¼	¾ ⅞
1024	Tavy Consols	6¾	1½
6000	Tincroft	7	12 12½
68	Tokenbury	170	10
120	Tolcarne	8	10
256	Tregorden	2½	5 5½
256	Trehane	1½	25 25½
5000	Treleigh Consols	6	3½
2000	Trenance	3	—
96	Tresavean	10	95
120	Trethellan	5	17½ 20
120	Treviskey and Barrier	130	120 125
1000	Tyllwyd	2	2½
200	United Mines	50	150
256	Wellington Mines	25	35
128	West Buller	10	300 320
256	West Caradon	20	110 115
512	West Fowey Consols	40	12
—	West Par Consols	2½	—
256	West Providence	9	26
200	West Seton	45	175 180
120	West Trethellan	8	5
512	West Wheal Frances	1¾	2
256	West Wh. Friendship	9	8
3725	West Wheal Jewel	12	¾ 1
256	West Wheal Tolgus	60	7½ 10
256	West Wheal Treasury	19	7½ 10
1024	Whiddon Mines	4½	2
5200	Wicklow Copper	5	8¾ 8½
107	Wheal Adams	79	80
1000	Wheal Agar	—	6
256	Wheal Albert	10	1
240	Wheal Anderton	28	10 15
128	Wheal Ann	—	50½
512	Wheal Anna Maria	7	4
120	Wheal Bal	5½	10
256	Wheal Benny	14½	2
1024	Wheal Bray	10	10
256	Wheal Blencowe	21	12
232¼	Wheal Calstock	9	20 25
256	Wheal Fortescue	15	—
388	Wheal Franco	27	11 12
128	Wheal Harriet	45	—
100	Wheal Henry	—	35
1024	Wheal Lawrence	2½	2½
112	Wheal Margaret	79	225
512	Wheal Mary Ann	5	26 27
5000	Wheal May	⅛	
360	Wheal Oak	6	5
3000	Wheal Penhale	8	9
210	Wheal Prospect	4	7
120	Wheal Reeth	41	150
128	Wheal Rose	60	3
128	Wheal Seton	214	250
180	Wheal Sisters	35¾	5
494	Wheal Sophia	4½	5
128	Wheal Spearne	10	68 70
128	Wheal St. Ann	30	35
550	Wheal Trescoll	9	10½
260	Wheal Trelawny	7¾	80 85
256	Wh. Tremaine (St. Ervan)	9½	2½
1024	Wheal Tremayne	9½	3 4
92	Wheal Tryphena	140	100
1000	Wheal Vincent	2¾	7
256	Wheal Viow (Perranz.)	¾	¾
184	Wheal Vyvyan	—	60

FOREIGN MINES.

Shares.	Company.	Paid.	Price.
5000	Alten Mining Company	11½	2½ 2¾
15000	Asturian Mining Co.	15	2½
20000	Australian	3	5½ 6½
6000	Barossa Range	1¾	1¾ ½
3000	Bolanos	150	—
2000	Ditto Scrip	17	—
10000	Brazilian Imperial	23	3½ 3¾
12000	Cobre Copper Co.	40	23¾ 4
10000	Copiapo Mining Co.	14	4 4½
20000	General Mining Ass'n.	20	10½
4000	Guadalcanal	5	2½ 3
5000	Kinzigthal Mining Ass.	2	1½
5051	Mexican Company	59½	—
2000	Mexican & SouthAmer.	8	1 1½
5000	National Brazilian	30	3½ 4
104000	N. Brit. Australasian	1	10s
7000	Royal Santiago	10	4½
11000	St. John del Rey	15	11½ 11¾
13174	United Mexican ...Av.	28½	3½ 3¾

RAILWAY TRAFFIC RETURNS.

Names of Railways.	Length. 1849	Length. 1848	Present actual cost.	Price p. share	Div. 1848	Traffic Returns. 1849	Traffic Returns. 1848
Aberdeen	33	16	1,000,547	16	—	£ 641	£ —
Belfast and Ballymena	37¾	37¾	514,968	19½	5*	492	380
Birkenhead, Lancashire, & Chesh.	19	15	1,088,804	37	5†	929	964
Bolton, Blackburn, & West Yorksh.	14	—	786,384	6½	—	413	247
Bristol and Exeter	85½	75½	2,660,490	59	—	4238	—
Caledonian	154	141	5,149,320	13	3	6659	5013
Chester and Holyhead	84	59½	3,358,217	12	4	1916	1635
Dublin and Drogheda	35½	35½	778,565	29½	—	740	731
Dublin and Kingstown	7¾	7¾	395,915	—	—	676	996
Dundee, Perth, & Aberdeen Junc.	47½	47½	544,554	15½	6½	1013	940
East Anglian (Lynn to Ely)	91½	65½	1,247,446	1½	—	685	726
East Lancashire	75½	24	2,628,519	13½	5	3212	1565
Eastern Counties and Norfolk	322	295	12,027,069	7½ 7¼	—	14906	16428
Eastern Union	78	50½	1,782,703	13	—	—	1451
Edinburgh and Glasgow	57½	52½	2,923,199	36 35½	6	3888	3725
Edinburgh and Northern	78	34	2,241,276	10½	2	—	1831
Glasgow, Paisley, and Ayr	102½	74	2,574,330	50	3	3006	2719
Glasgow, Paisley, & Greenock	23	23	852,846	17	2	971	1004
Gt. Northern & East Lincolnshire	143	—	5,138,756	7¾	5†	2743	
Gt. Southern & Western, Ireland	168½	110½	3,552,589	28½	6†	3362	3187
Great Western	230½	206½	11,867,042	54 55	6½	20101	20983
Lancaster and Carlisle	90	70	1,476,102	48½	4½	3789	2370
Lancashire and Yorkshire	206½	127½	10,063,862	65	5¾	11227	11393
Liverpool, Crosby, & Southport	13	—	84,455	3	—	96	142
London and North Western	478	428	26,251,635	110¾	7	40018	42848
London and Blackwall	5½	4	1,299,675	3	1-12	677	1058
London, Brighton, & South Coast	170	162½	6,502,600	70½	2½	11677	12132
London and South-Western	220½	194	7,874,259	31¾	5½	10301	11915
Londonderry and Enniskillen	14½	14½	185,739	16	—	149	147
Manchester, Sheffield, & Lincolnsh.	157½	91½	6,598,260	23 21	5	4825	2848
Midland Company	471	423½	15,133,779	47¾	5½†	24186	24656
Midland Great Western (Irish)	50	36½	725,332	22½	4†	1189	1233
Monklands	36	—	486,245	—	6	—	—
North British	122	83	3,649,055	10¾ 11	4½	3346	2954
Scottish Central	45½	—	1,364,228	17½	7	1616	1093
Shrewsbury and Chester	43	23	969,618	12	5	1409	817
Shropshire Union	30	—	——	2½	—	443	—
South Devon	57¾	29	1,909,232	7	5	1458	1569
South-Eastern	189½	165½	8,666,007	17½	5½	12358	11117
Taff Vale	38	40	879,110	—	7½	2055	—
Ulster	36	36	723,829	45¾	—	767	852
Waterford and Limerick	25	—	512,894	—	—	247	—
West Cornwall	13	—	——	—	—	289	—
Whitehaven Junction	12	12	150,879	9½	3	197	183
York, Newcastle, & Berwick	290½	242½	6,827,849	18	7	12996	13860
York and North Midland	256	234	4,983,618	21¾	7	6521	9584

JOINT-STOCK BANKS.

Shares.	Companies.	Paid.	Div. p. cent.	Price.
22,500	Australasia	£40	£3	£24½
20,000	British North American	50	6	40
20,000	Colonial	25	5	6½ 6½
20,000	Commercial of London	20	6	20½
60,000	London Joint-Stock	10	6	17
40,000	London and Westminster	20	6	24½
10,000	National Provincial of England	35	5	35½
20,000	National of Ireland	22½	6	18½
20,000	Provincial of Ireland	25	8	39
10,000	South Australia	22½	—	17½ 18
20,000	Union of Australia	25	6	25½ 26
60,000	Union of London	10	6	10½

THE LEAD TRADE.

We are happy to have it in our power to report considerable improvements in this important branch of the trade of the country.

The year opened with a large demand for pig-lead for shipment to the United States of America; and this demand had steadily increased during the year. This is altogether a novel feature, as the United States, instead of importing, had for many years exported considerable quantities of this metal. These large shipments, combined with a more active demand from the continental ports, must have had a considerable influence on the stocks in this country; and for the information of those of our readers who are interested in this article, we subjoin a comparative account of the exports for 1848 and 1849.

The actual shipments made in the month of Sept., 1848, amounted to 686 tons, of the value of 12,127*l.*; in the month of Sept., 1849, to 2687 tons, of the value of 44,469*l.*

The shipments for the eight months, ending Sept., 1848, were 4222 tons, of the value of 78,908*l.*; for the eight months, ending Sept., 1849, they were 10,824 tons, of the value of 182,109*l.*

LEAD ORES

Ticketings for about 100 tons (20 cwts.) Newtonards Lead Ore.

Douglas, Isle of Man, October. 6.

Bidders.	Price per Ton.
Thomas Somers – Bristol	£7 7 0
Tamar Smelting Company—Tavistock	8 18 0
Combmartin Company—Newport	9 0 0
Newton, Keates, and Co.—Liverpool	9 0 6
Sims, Willyams, and Co.—Llanelly	9 1 0
Walker, Parker, and Co.—Chester (purchasers)	9 4 6

Ticketings at the White Horse Hotel, Holywell, Oct. 11.

Mines.	Tons.	Price.	Purchasers.
Maesyrerwddu (Talargoch)	65	£ 9 17 6	Newton, Keates, & Co.
ditto ditto	15	10 3 6	Walker, Parker, & Co.
Coetia Llys ditto	27½	10 13 6	Mather & Co.
Hendre	100	9 18 0	Walker, Parker, & Co.
Deep Level (Halkin Mines)	41½	9 16 0	ditto
ditto ditto	41½	9 16 0	Newton, Keates, & Co.
Fronfownog	35	9 9 0	Mather & Co.
ditto	8	12 18 0	J. P. Eyton.
Aberduine	4½	9 9 0	Mather & Co.
Talacre	50	11 6 6	J. P. Eyton.
ditto	50	11 7 6	Walker, Parker, & Co.
Maesysafn	50	9 15 0	Newton, Keates, & Co.
Cairnsmore	13	9 1 0	Mather & Co.
ditto	13	9 1 0	Walker, Parker, & Co.
ditto	14	9 1 0	Newton, Keates, & Co.
Machynlleth	40	10 4 6	Walker, Parker, & Co.
South Australia	26	12 12 0	Mather & Co.
ditto	24	12 15 0	ditto
ditto	20	13 15 0	ditto
Rhiwerth	7	10 13 6	J. P. Eyton.
Total tons	645.		

Sold at the Mine.

East Wheal Rose	18	£14 12 6	R. Michell & Son.
ditto	16	13 9 0	Sims & Co.
ditto	6	5 7 6	ditto

Sold at Bagillt.

Shallee	28	£13 10 6	Mather & Co.
ditto	8	9 10 0	ditto
ditto	2	8 11 6	Walker, Parker, & Co.

Sold in London.

Cwm Erfin	20	£12 12 0	Newton, Keates, & Co.

BLACK TIN

Sold to the Union Smelting Company, on the 18th Sept.

Mines.	Tons cwt. qr. lbs.	Amount.
Tincroft	39 9 0 16	£1338 18 2
Lewis	22 15 3 6	869 6 8
Ditto	5 4 11 1	171 13 5

COPPER ORES.

Sampled Sept. 26, and Sold at Andrew's Hotel, Redruth, Oct. 11.

Mines.	Tons.	Price.	Mines.	Tons.	Price.
Carn Brea	93	£ 9 2 0	Par Consols	94	£7 0 0
ditto	92	4 19 6	ditto	89	6 2 0
ditto	89	5 2 0	ditto	83	6 10 0
ditto	88	5 8 6	Levant	46	10 17 0
ditto	86	11 9 6	ditto	40	6 6 6
ditto	71	9 2 0	ditto	39	5 4 6
ditto	45	4 16 6	Wh. Tremayne	68	3 10 6
ditto	36	12 16 6	ditto	54	2 2 0
ditto	35	9 4 0	Wellington Mines	59	8 6 6
ditto	33	2 7 0	ditto	30	3 14 6
ditto	1	37 0 0	ditto	29	5 4 0
Tywarnhayle	82	2 15 0	West Wh. Seton	78	4 19 6
ditto	68	2 9 0	ditto	37	4 3 0
ditto	58	3 0 6	West Wh. Buller	45	5 19 6
ditto	43	Withdrawn.	ditto	42	8 15 0
ditto	34	2 12 0	ditto	16	5 1 0
ditto	32	8 13 0	Wh. Agar	64	5 4 0
ditto	9	3 1 0	Wh. Prosper	15	2 2 6
Nancekuke	45	4 13 6			

TOTAL PRODUCE.

Carn Brea	669	£4983 12 6	Wellington Mines	118	£753 14 6
Tywarnhayle / Nancekuke	372	1175 5 0	West Wh. Seton	115	541 12 0
			West Wh. Buller	103	717 3 6
Par Consols	266	1742 15 0	Wh. Agar	64	332 16 0
Levant	125	955 17 6	Wh. Prosper	15	31 17 6
Wh. Tremayne	122	353 2 0			

Average Standard .... £102 7 0 | Average Produce 8⅛
Average Price per ton £6 1 0
Quantity of Ore .... 1926 tons | Quantity of Fine Copper, 164 tons 19 cwts.
Amount of Money £11,587 15 6
LAST SALE.—Average Standard.......£106 7 0.—Average Produce....... 7¾
Standard of corresponding sale last month, 103*l.* 16s.—Produce, 8¼.

COMPANIES BY WHOM THE ORES WERE PURCHASED.

	Tons.	Amount.
Mines Royal	240	£1314 8 6
Vivian and Sons	543	3453 7 8
Freeman and Co.	208	1324 9 0
Sims, Willyams, and Co.	474	2484 16 2
Williams, Foster, and Co.	279	2060 18 8
Schneider and Co.	181	949 15 0
Total tons	1926	£11,587 15 6

Copper ores for sale on Thursday next, at Andrew's Hotel, Redruth.—Mines and Parcels.—Devon Great Consols, Wheal Josiah, Wheal Maria, Wheal Fanny, and Wheal Anna Maria 1320—West Caradon 326—Marke Valley 227—Fowey Consols 223—Wheal Friendship 205—Bedford United Mines 122—Holmbush 61—Wheal Pink 59—Wheal Penhale 33—Carthew Consols 6—West Wheal Mary 6—Wheal Oak 6.—Total, 2594 tons.

Copper ores for sale on Thursday week, at Farquharson's Hotel, Truro.—Mines and Parcels.—United Mines 1282—Wheal Comfort 346—Par Consols 300—South Caradon 218—Tresavean 148—Treleigh Consols 122—West Fowey Consols 98—West Trethellan 57—West Wh. Jewel 51—Prideaux Wood 35—Wh. Prudence 32—Creegbraws 24—Total, 2713.

COPPER ORES

At SWANSEA, for sale Oct. 18.—Cuba 108, ditto 103, ditto 93, ditto 80, ditto 78, ditto 75, ditto 14, ditto 135, ditto 100, ditto 95, ditto 93, ditto 71.—Cobre 96, ditto 91, ditto 89, ditto 74, ditto 71, ditto 61, ditto 46, ditto 95, ditto 90, ditto 87, ditto 85.—Berehaven 129, ditto 106, ditto 104.—Knockmahon 127, ditto 98.—Gascoyne Slag 44.—Gascoyne 10.—Lackamore 49.—Laxey 47.—Ballymurtugh 16, ditto 2.—Total, 2632 tons.

NOTICES TO CORRESPONDENTS.

*** We must impress upon our correspondents, the necessity of invariably furnishing us with their names and addresses—not that their communications should, consequently, be noticed, but as an earnest to us of their good faith.

"A Jeweller" (Bond-street).—The art of cutting and polishing of diamonds, though probably of remote antiquity in Asia, was first introduced into Europe in 1456, by Louis Berghen, of Brughes, who accidentally discovered that by rubbing two diamonds together, a new facet was produced.

"B. F." (Hartlepool).—Dr. Thompson arranges the different kinds of British coal under the following divisions:—1. Caking coal.—2. Splintery coal.—3. Cherry coal, which is less hard and more slaty in fracture.—4. Cannel coal, such as that from Wigan, in Lancashire.

"Chemicus" (Liverpool).—Homberg's phosphorus is a spontaneously inflammable compound, which results from potash alum, ignited with charcoal. The potassa is decomposed in this process along with the acid of the alum, and pyrophorus is probably a compound of sulphur, charcoal, and potassium, with alumina. Pyrophorus is most successfully prepared by the following process:—Mix equal parts of honey, or of brown sugar, and powdered alum in an iron ladle; melt the mixture over a fire, and keep it stirred till dry; reduce the dry mass to powder, and introduce it into a green glass phial, coated with clay, and placed in a crucible of sand. Give the whole a red heat, and when a blue flame appears at the neck of the phial, allow it to burn about five minutes; then remove it from the fire, stop the phial, and allow it to cool, taking care that air cannot enter it.

H. Nelson (Stockton).—The explosion and catastrophy at the Felling Colliery, near to Gateshead, took place on the 25th of May, 1812. On that day, the night shift was relieved by the day shift of miners at 11 o'clock forenoon. There were 121 persons in the mine, and who had taken their several places, when, at half-past eleven o'clock, the gas fired, and produced a most tremendous explosion, which alarmed all the neighbouring villages. The subterraneous fire broke forth with two heavy discharges from the dip-pit, and these were instantly followed by one from the rise-pit. A slight trembling, as from an earthquake, was felt for about half-a-mile round the colliery, and the noise of the explosion, though dull, was heard at from three to four miles distance. Immense quantities of dust and small coal accompanied these blasts, and rose high into the air, in the form of an inverted cone. The heaviest part of the matter, such as corves, wood, and small coal, fell near the pits, but the dust, borne away by a strong west wind, fell in a continued shower to a distance of a mile and a half from the pits. In the adjoining village of Heworth it caused a darkness like that of early twilight, and covered the roads so thickly, that the footsteps of passengers were imprinted in it. The heads of both shaft frames were blown off, their sides set on fire, and their pulleys shattered in pieces. The coal dust ejected from the rise-pit into the horizontal part of the ventilating tube was about three inches thick, and soon burnt to a cinder; pieces of burning coal, driven off the solid stratum of the mine, were also blown up this shaft. Of 121 persons in the mine at the time of the explosion, only 32 were drawn up the pit alive, and of these three died within a few hours of the accident. The viewer, with his assistants, instantly descended, in face of the most imminent danger, eager to save, if possible, any of the workmen; but the mine was found to be on fire, and they durst not proceed. In consequence of this fire, another explosion took place, and no alternative was left, but to shut up the pits and extinguish the fire, which was accordingly done. The pits were, after a considerable period, again opened, but it was the 19th of September before the complete ventilation was restored, and the last of the bodies of those who had perished was found, a period of 117 days from the day on which the accident took place.

Explosions in Collieries.—In Mr. Colwell's letter, in last week's Journal, for "a fiery furnace is brought into requisition, which I have seen more than 1600 feet, beneath the surface of the earth," should have been "1000 feet."

"A. X. Y."—A letter has been addressed to the Post-office, Truro.

"T. B." (Wolverhampton).—The first mill for rolling and slitting of iron in England was constructed by Godfrey Box, of Liege, at Dartford, in 1590. A paper-mill now stands on the site.

J. Peach (Lullingstone).—Mr. Singer's electrical and chemical apparatus cement consists of 5 lbs. resin, 1 of bees'-wax, 1 of red ochre, and two table spoonfull's of plaster of Paris, all melted together. A cheaper one, for cementing voltaic plates into wooden troughs, is made with 6 lbs. of resin, 1 lb. of red ochre, ¼ lb. of plaster of Paris, and ¼ lb. of linseed oil. The ochre and plaster of Paris should be previously calcined, and added to the other ingredients in their melted state. The thicker the stratum of cement that is interposed, the stronger, generally speaking, is the junction.

"An Engineering Pupil" (Bradford).—The system of Fell's propulsion is that of compressed air. A stationary engine communicates with a cast-iron pipe placed between the rails along the whole length of the line; and by this means, air vessels, of requisite size, placed along the pipe, are filled with air of the wished-for density. The air vessels supply the momentum to the engine truck, a lever bar attached to the truck opening as it passes along a valve or cock, which causes the compressed air to escape into a "chamber," running along the under part of the truck, and thus become available for propulsion.

"A Merchant" (Newcastle-on Tyne).—Pig-iron, pig-lead, old copper, and block tin are allowed to be imported duty free into Denmark. The duties are—on iron bars, 36 skilling; iron plates, 1 rix dollar 48 skilling; ditto tinned, 2 rix dol. 32 sk.; lead sheets or blocks, 64 sk.; ditto pipes, 80 sk.; copper plates or wire, 2 rix dol. 80 sk.; ditto plated, 5 rix dol. 64 sk.; all sorts of tin wares, 12 rix dol. 48 sk. per 100 lbs. There are 96 skillings in the rix dollar, which is equal to about 2s. 2d. sterling.

John Evans (Cardiff).—For heating axes, or other similar articles, the Americans employ a furnace in the form of a vertical cylinder, the exterior made of sheet-iron, lined with fire-brick, 4 feet 8 inches diameter, or of such outside diameter as to give it an inside arc of 4 feet and 3 feet high. In the interior of the cylinder several fire chambers are formed—usually four. The inner wall of each fire chamber is 18 inches long, 4 inches from front to back, and about 4 inches in depth, forming in the whole a circle of 3 feet 4 inches diameter. Under each of these are grate bars, and air is supplied through a pipe connected with a blowing apparatus. A circular table of cast-iron, 3 ft. 4 inches in diameter, is made to revolve slowly on the upper part of the chamber. This chamber is sustained on a central shaft, which passes down through the furnace, and has its bearing on a step below it; a pulley keyed on it serves to communicate rotary motion to the table. When the axes, or other articles, are to be heated, they are placed upon the table, with their bits, or steeled parts, projecting so far over its edges as to bring them directly over the centre of the fire, and the table is kept slowly revolving during the whole time of heating. When duly heated, they are ready for the process of hardening. The hardening bath consists of a circular vat of salt water. Within the tub or vat, a little above the surface of the liquid, is a wheel, mounted horizontally, with a number of hooks around the periphery, upon which the axes, or other articles, are suspended. The height of the hooks from the surface of the liquid is such as to allow the steeled parts only to be immersed. As soon as the hardening is effected, the articles are removed from the hooks, and cooled by dipping in cold water. With the best cast-steel, it is said a temperature of 510° Fahr. has been found to produce a good result in about 45 minutes.

"An Experimentalist" (Penzance).—Volta's apparatus is thus constructed:—Raise a pile, by placing a plate of zinc, a piece of card, or woollen cloth, and a plate of silver on each other; then a second piece of zinc, &c., successively, until the elevation is at some height, for the effects are greater in proportion to its height; immerse the pile in acidulated liquid; then touch both ends of the pile, at the same instant, with one piece of iron wire, which runs through holes in the centre of each plate. On contact, a spark is excited from the extremities of the pile, and luminous points are often perceived at different heights, where the zinc and silver come into mutual contact. The zinc end of this pile appears to be negatively electrified; that formed by the silver, on the contrary, indicates marks of positive electricity. If both extremities of the pile are touched, after the hands are dipped in water, or a saline solution, a disagreeable pricking in the fingers and elbow is felt. If there is placed in a tube, filled with water, and hermetically closed by two corks, two wires which are in contact at the other extremity—one with the summit, the other with the base of the pile—these ends, even when separated only by the space of a few lines, experience evident changes at the instant the extremities of the pile are touched. The wire in contact with the part of the pile composed of silver becomes covered with bubbles of hydrogen gas; that which touches the extremity formed by zinc becomes oxydised, or gives off oxygen gas. Fourcroy attributes this phenomenon to the decomposition of water by the galvanic fluid, which abandons the oxygen to the metal that touches the positive extremity of the pile, then conducts the other gas invisibly to the end of the other wire, there to be disengaged.

"A Student" (King's College).—Flexible sulphuret of silver consists of silver, sulphur, and a little iron. It is externally of a dark colour, approaching to black. It occurs both massive and in small tubular crystals, which appear to be right oblique-angled prisms, the lateral planes of which are alternately 125° and 55°. Flexible when in thin laminæ, and readily separated into them. Cleavage parallel with the terminal planes, very soft, and yields readily to the knife. Lustre metallic, but less brilliant than that of sulphuret of silver. This rare mineral has hitherto been met with only in Hungary, and at Freyberg, in Saxony, and even at those localities in a very small quantity.

"W. P." (Wych-street).—The following lacquer is often used for brass:—Gamboge, cut small, 1 ounce; Cape aloes, cut small, 3 ounces; shellac, 1 lb; rectified spirits of wine 2 gallons. It must be dissolved, strained, and one pint of turpentine varnish added to it.

James Almar (Liege).—During the first six months of the year 1829, when all the cast-iron in the Clyde Iron Works was made by the cold-blast, a ton of cast-iron required for fuel to reduce it 8 tons 1½ cwt. of coal converted into coke. During the first six months of the following year, when the air was heated to near 300° Fahr., 1 ton of cast-iron required 5 tons 3¼ cwts. of coal converted into coke. The saving amounts to 2 tons 18 cwts. on the making of 1 ton of cast-iron. But from that saving is to be deducted the coals used in heating the air, which was nearly 8 cwts. The net saving, thus, was 2¼ tons on a single ton of cast-iron. During the year 1830, the air was heated no higher than 300° Fahr. The great success of these trials encouraged the iron-masters to try the effect of a still higher temperature. The saving of coal was greatly increased, so that, in 1831, Mr. Dixon, of Calder Iron-Works, attempted the substitution of raw coal for coke. The attempt was successful. The temperature of the air under blast had now been raised so as to melt lead and sometimes zinc, and, therefore, was above 600° Fahr. It became in consequence so much elevated in temperature as to require the adoption of an old invention, called the *water-tuyeer*, which consists in surrounding the tuyeres with water. The water is kept continually changing as it heats, by means of one pipe, to admit the water cold, and another to let it escape when heated. During the first six months of the year 1833, when all these changes had been fully brought into operation, 1 ton of cast-iron was made by means of 2 tons 5½ cwts. of coal, not previously converted into coke. Adding to this 8 cwts. of coal for heating, we have 2 tons 13½ cwts. of coal required to make 1 ton of iron; whereas, in 1829, when the coal blast was in operation, 8 tons 1½ cwt. of coal had to be used. This being almost exactly three times as much, as we have from the change of the cold-blast to the hot, combined with the use of coal instead of coke, three times as much iron made from any given weight of splint coal. The efficacy of a given quantity of air in the production of iron is also greatly increased, and the requisite portion of the flux diminished.

"L. M." (Ipswich).—The Royal Society was incorporated by Charles II., 1662.

J. C. W." (Hampstead).—Our correspondent suggests, as a hint to parties interested in the concession for carrying out an electric telegraphic communication between England and France, whether it would not be worth while to make the experiment of employing two conductors insulated from each other, for conducting the electric fluid across the Straits.

"J. C., C.E."—Our correspondent does not in any way describe his new water valve—merely stating its capabilities. If, as he states, it presents no angles to the water, and that whatever the pressure, it can be opened by the finger or thumb, without any mechanical arrangement, we think it of some value, and shall be happy to receive a description, with a diagram.

*** The numerous disappointments in procuring back Numbers during the past year, induces us to suggest, that subscribers should be careful in filing, or otherwise preserving, their papers; and where extra copies are required, that they should be applied for as early as possible.

The Copper Trade.—We have been unable to continue our remarks on the copper trade of the last quarter, but hope, in our next, to give the promised analysis of the sales at Swansea.

"Franklin Coxworthy's Discoveries in Natural Philosophy" shall be continued in our next Journal.

"A Shareholder in the St. John del Rey Mining Company" (City).—The letter is inadmissible without the writer's name being attached. The information, if required, could be obtained on application to the secretary at the office.

Royal Mail Steam-Packet Company.—We are compelled to postpone our report of the meeting on Thursday last.

Mr. Thomas Deakin (Blaenavon).—We have received the two communications from this gentleman, denying the authorship of some information published in the *Mining Journal* of 30th of June last, respecting the formation of a railroad over the hills, between Blaenavon and Abergavenny. There is, however, nothing that we can see to cause Mr. Deakin any anxiety—there being nothing impracticable in such a scheme, which Mr. Richardson, of Neath, in the Journal of the 14th July, showed, had been employed 50 years since, and we were under the impression that Mr. Deakin believed he was informing our readers of an improved system about being adopted by some of the iron companies in the neighbourhood. The only question appears to us to be, whether such plan would afford quicker transit, and be productive of greater economy than by the old road mentioned.

"P. A." (Sheffield).—We have no particular further information on the subject mentioned by our correspondent. Tin in blocks, ingots, bars, or slabs, is, under our present tariff, subject to a duty of 6s. per cwt., and from British possessions 3s. per cwt., and tin manufactures 10*l.* per cent; nor is there, in the late alteration of the navigation laws, to the best of our knowledge, any clause by which these duties can be evaded.

"W. C." (Cottage Grove, Clapham).—We entirely agree with our correspondent that the water of the Thames is totally unfit for domestic purposes, and have no doubt the drinking it has been one great acceleration of the epidemic raging to such fearful extent—if not, indeed, in a majority of cases, the primary cause. Witness the overwhelming amount of mortality in Lambeth, Newington, Chelsea, and other districts supplied from the Thames, while the number of cases have been far less, in proportion to the population, in the northern localities supplied from the New River and the Lea. The subject is however, ably taken up by the daily press, on whom the duty more properly devolves, and we have not at present space for the communication.

South Wheal Josiah Mine.—We have received a further communication from "Jacobi Vox," having reference to the remarks which appeared in our Notice to Correspondents last week. The writer declines giving permission to attach his name, and hence we must decline giving insertion to further communications on the subject. The reason assigned by "Jacobi Vox" for retaining his *anonyme* we admit may be all fair as exposing abuses where found to exist, but we cannot help thinking he goes a little too far, in using names of parties, whom he would attack without meeting them on level ground. We are obliged to our correspondent for drawing attention to the subject, and eliciting remarks from others. How far the one or other may satisfy the readers of the *Mining Journal* remains to be seen. For ourselves, we have only done our duty—*audi alteram partem.*

"Mineralogist" (Golden-cross, Charing-cross).—We consider the communication of our correspondent one of those unfair and unwarranted attacks on a respectable and generally-believed impartial agent, which should not be encouraged. True, our "Mineralogist," fastidious in his science, may be correct in saying "he never had the good fortune to meet with native tin, or its oxide, in the form of the *cube*;" but he is, doubtless, perfectly aware that the black oxide crystallises in a solid figure, sufficiently approaching that mathematical form, to have induced the whole tin mining population to adopt the term. Capt. Carpenter openly placed his name to the report—a sufficient guarantee, we thought, for its correctness, and for its insertion in the *Mining Journal.*

We are indebted to the Editor of the *Penzance Journal* for forwarding us early slips of his lengthy reports of the interesting proceedings at the meetings of the Royal Geological Society of Cornwall, and of the Natural History and Antiquarian Society, both held at Penzance during the past week.

*** It is particularly requested that all communications may be addressed—

To the Editor,
Mining Journal Office,
26, Fleet-street, London.

And Post-office orders made payable to Wm. Salmon Mansell, as acting for the proprietors.

THE MINING JOURNAL

Railway and Commercial Gazette.

LONDON, OCTOBER 13, 1849.

The Mining Journal is published at about Eleven o'clock on Saturday morning, at the office, 26, Fleet-street, and can be obtained, before Twelve, of all news agents, at the Royal Exchange, and other parts of London.

The returns referring to almost every branch of the trade and commerce of Great Britain, up to the end of the third quarter of 1849, are, we think, taken as a whole, highly satisfactory and encouraging. It is true there are parts in this great account which have not thriven to the extent which was expected; for although the thousand wheels of commerce mutually act upon each other, and impede or accelerate the general motion by a tolerably comprehensive law, there ever has been those local and occasional perturbations which did not nevertheless affect the harmonious march and steady progress of the great whole. We could have wished to see the mining interest of the kingdom standing in those returns in a better position than it does—not that we have the least complaint to make, or the smallest fears to utter. This branch of public industry has clearly done well, though it would be a source of much gratification had its success been still greater; but we have ourselves, in common, we believe, with those who are most intimately acquainted with mining affairs, the utmost confidence in its present stability and its future progress. Great Britain, in this and in other branches of her indigenous industry, has now entered into competition with all the world; and the shock of this new contest has, in some instances, deducted part of her profits, and dispersed some of her trade. As that is but a momentary effect, so can it be also but a momentary inconvenience; for the greater capital, the greater connection, the greater aptitude for extensive business, and the permanent establishment of greater freedom in our commercial regulations, will, with the force of a natural law, bring to us those advantages which, for the sake of others still greater, we had temporarily relinquished. It is on that ground that, if when the entire year's accounts are completed, we should still find that our success in mining operations has been less than we bargained for—we shall still be of opinion that all the pre-eminence and prosperity for which we had an historical and a world-wide reputation, is on the wing to us, with all the rapidity which circumstances will permit to its flight. Though it is for many reasons, one of the lowest and least important aspects in which the late epidemic can be regarded, yet for certain its operation on the business of the country has been to lessen and to lower it considerably. It checked and paralised the spirit of individual merchants, and abridged the productive power of a large portion of the working classes. This scourge, recently so prevailent, has now nearly left the metropolis, and, as we trust, is wearing itself out in every district of the island; so that this rod, whose pestilential shaking frightened all classes of persons, more or less, being now, by the good hand of Him who has a right to chasten us, removed, or in course of removal, there is just reason to expect that the enterprise of our commercial men will be reawakened, and the industry of all exercised in mining, and in every other department, with increased diligence and enlarged success.

The thirty-eighth annual meeting of the Royal Geological Society of Cornwall took place in the museum on Friday, the 5th inst.—Sir Charles Lemon, Bart., M.P., F.R.S., in the chair, who delivered his annual address to a highly respectable and numerous audience. He introduced his remarks by a feeling allusion to the loss the society had sustained during the year by the deaths of Mr. Turner and Mr. John Williams, of Burncoose. The latter, in particular, was really a scientific mineralogist, whose collection of Cornish minerals was unequalled, and who kindly gave access to them to all who applied in the pursuit of science. He stated that the bill for enabling them to erect a suitable building for three public bodies—a sufficiently large museum, a library, and savings' bank—was postponed to next session, when it would be certainly proceeded with. This was most desirable, as he feared they should have to struggle through another year of difficulties in stowing away their specimens, and still submit to the obstruction to the progress of science occasioned by want of space. They had, on various occasions, had to complain of the loss of specimens which had been offered, on the ground of no proper accommodation being provided for them. No volume of the *Transactions of the Society* had been published for the year; but two parts of a work to illustrate British organic remains had been presented, in which it was intended to figure, in elaborate detail, a selection of fossils, illustrative of the genera, and more remarkable species of all classes of animals and plants contained in British rocks. The society have to thank Sir H. De la Beche for obtaining this work. Some duplicates from Sir Philip Egerton's collection of fossil fish—the finest in the country—had been obtained, examined by Agassiz, and verified. The principal are from the Devonian system, by far the most characteristic in its fossils. In this difficult research, it is astonishing what progress has been made in a few years. Previous to 1834, only four species of fish of the old red sandstone were determined; yet at the meeting of the British Association at Glasgow, in 1840, Agassiz examined 20 genera, and upwards of 50 species, all recently discovered and undescribed. It was then that Mr. Miller produced in his work specimens of those strange animals, presenting the structure of fishes with the wings of birds, to which the name "pterichys" has been given. Our present knowledge of the Devonian fossil fish comprise about 100 species. Sir Charles then alluded to the researches of a working shoemaker of Liskeard, named John Giles—a paper by whom was afterwards read, "On the Fossiliferous Rocks of the Liskeard Districts;" and stated that, as the specimens sent were of really saleable value, a gratuity of 2*l.* 2s. should be given him. The council also recommended his being elected an associate of the society.

The annual report of the council was then read, which congratulated the society on the continued exertions of its members. The fish beds on the eastern shore have been traced to Whitesand Bay, near Plymouth, exhibiting more of the character of the Devonian series, and extending from the western side of Fowey river. One great point to which the council called attention was to trace the deposits on the northern coast from Newquay, westward across the country, to its southern coast. Communications had been received from several working miners, which the council were anxious to encourage, but would prefer facts to theories. The report concluded by expressing regret at the want of room for a proper display of their collections, as remarked upon by Sir Charles Lemon. The report of the curator, Mr. Couch, was also read, which also, after a description of the specimens received, alluded to the want of accommodation, and concluded by stating that, if sufficient space was obtained, he could get between 2000 and 3000 additional specimens illustrative of Cornish rocks. From the treasurer's report, it appeared that the income for the year had been 188*l.* 9s., and expenditure 162*l.* 19s.; leaving a balance in hand of 25*l.* 10s.; 80*l.*, instead of 50*l.*, had been deposited towards the building fund; and there were several subscriptions unpaid to the amount of between 50*l.* and 60*l.*

A number of donations, both to the museum and library, have been made during the year, and the progress of the society has been satisfactory and encouraging. The only drawback appears to be the want of exhibition room for the large and continuous increase of specimens, which requirement will, we trust, be amply provided for on the passing of the bill before mentioned, and that, in another year, we shall have to congratulate the society on being in a position to establish a museum on a scale equal, if not superior, to that of any provincial locality in the kingdom. Several papers were read, abstracts of which will be found in another column.

In another column will be found a communication, signed "Pro Bono Publico," calling attention to our remarks in the *Mining Journal* of 22d September last, on the subject of employing convict labour in the cultivation of the at present unproductive Crown lands, both mineral and agricultural; and informing us that a somewhat similar project was started in the reign of Queen Anne by the Mineral and Battery Company—with this difference, however, that the latter was a plan proposed to the Government for the purpose of employing the poor, and, by rendering their labour productive, to diminish the poor-rates, and enable families, or individuals, eventually to emigrate to the colonies. Our proposal was for rendering convict labour profitable, and at the same time to bring vast tracts of waste land into cultivation, as, in several mineral districts in England and Wales the Crown holds extensive mining properties, in the development of which convict labour might be most advantageously employed. It must not be understood that we are advocating the letting loose, as it were, upon society those wretched beings, who, steeped in crime, have been declared by their fellow-men, and the judicial authorities of their country, unfit longer to contaminate its social compacts; nor can we feel surprise at the agitation at the Cape of Good Hope, on the colonists being apprised of the intention of the Government to make it a penal settlement—a more unjust attempt at a breach of faith was, probably, never attempted by an inefficient ministry. By the plan we would adopt, our colonics would, in a great measure, be relieved from that importation of crime to which they are at present subject; and we have no doubt that, while the strictest discipline was kept up, and only the most humble fare allowed, constant reasonable employment, not excessive toil, with some extra allowances, and even small rewards in money, to be laid by against the termination of their sentence, for the most industrious and best conducted, would beget in them habits of bodily exertion and activity, which would make them useful members of society, and, having fully earned their expenses during their imprisonment, they might then be most advantageously sent out as free men to any colony they choose, as they could not rely on obtaining honest employment in the mother country, whose laws they had so grossly violated.

Whatever plans might hereafter be proposed, or adopted, for the profitable employment of the poor, convict labour, in the way, and for the objects, we have suggested, must be carried out in districts away from large masses of population; and such a spot as Dartmoor, with its prison, which we have before noticed, would be admirably adapted for a fair trial of the experiment. Here, at stated periods during each working-day, closely watched by armed keepers, under the most strict discipline, and in chains, if necessary, hundreds of men and boys might be profitably employed in cutting turf, converting it into charcoal, and collecting its other valuable products, draining and bringing the land into cultivation, and in exploring the large mineral deposits which are known there to exist. We believe, under the present system of prison discipline (notwithstanding so many felons are sentenced to hard labour, which is nothing more than, in most cases, grinding the wind by the treadmill), there is not a prison in the kingdom where a prisoner, taking the average, earns his proportion of 1-10th of the cost of keeping him in safety; while we have not the slightest doubt but that, by a well-devised and properly-arranged plan, founded on some such principle as we have here advocated, not only might the convict's labour be sufficiently productive to defray the outlay upon him, but a large surplus of profit to Government be the result.

We could expatiate at greater length on this important subject, especially as regards the mineral wealth of Ireland, but must reserve our further remarks for next week's Journal.

The Coal Trade of Liverpool.—A report on this subject has just been published by Mr. Braithwaite Poole, manager of the goods department on the London and North-Western Railway. The report goes very much into detail as to the importance of the coal trade to Great Britain. The mines in this country are set down at 3000, which employ 230,000 men, women, and boys; 30,000,000*l.* of capital is invested in working materials, and the coal obtained amounts to 34,000,000 tons annually—the estimated value of which, at the pit's mouth, is 10,000,000*l.* Mr. Poole points out the advantages to Liverpool of the coal trade; and shows that the exportation of coal from this port was, in 1847, 121,587 tons; and, in 1848, 131,947—the quantity brought to Liverpool in 1848 being 1,350,000 tons, which amount, he concludes, might be considerably increased, if greater facilities were afforded for its shipment. He concludes with a series of recommendations—That the London and North-Western Company should afford the greatest amount of accommodation to the coal proprietors, and, by alterations and improvements at the yard in Crown-street, save much of the expense and delay that is now incurred; that the Liverpool Dock committee be communicated with as to the advisedness of benefiting their estate, and the merchants of the town, the shipping interests, &c., by appropriating the Victoria or Trafalgar Dock exclusively as a coal dock, and that lines of railway be laid down from Waterloo station to one of the said docks; also that, in the negociations of the dock trust with the company respecting the station at Wapping, the right of appropriation of the east side of the new dock to purposes of railway communication should be treated as a *sine qua non.* Mr. Poole, in closing his report, contends that every vessel coming into the port for coal would bring goods of some description, and thus the traffic would be increased, the population employed, and the town, dock estates, railway, and canals all be benefited together.—*Liverpool Mercury.*

ON ASCERTAINING THE COMPARATIVE ILLUMINATING POWER OF DIFFERENT GASES.

Dr. Andrew Fyfe, M.D., Professor of Chemistry, King's College, Aberdeen, has published the method by which he ascertains the comparative value of gases from different coals for the purposes of illumination. He first obtains the amount of condensation by chlorine, and then along with it to take the consumption under similar circumstances, or the time required for consuming a like quantity—in other words, its durability. He states that, independent of the quantity, illuminating matter much depends on the mode and time of consumption, and whether or not it is perfectly and properly consumed; and the researches of both Christison and Turner have shown that the illuminating power of a gas may be high or low, according to the modes of burning it. He is aware that it has been alledged as an objection to the chlorine process, that, when one gas indicates a greater amount of condensation than another, the latter will require a longer time to consume it; but he shows it is the reverse. In all his experiments, the results by the photometer, and by the chlorine process, taking durability into account, very nearly correspond.

Thus, a gas from English caking coal by chlorine 5; durability by a jet of 1-33d, and 5-inch flame, 1 foot 45′. A gas from a Scotch parrot coal, by chlorine, 12·5; durability, 57′5; then as 5 : 12·5 :: 1 : 2·5, and as 45 : 57·5 :: 2·5 : 3·19. By the photometer the lights from the 5 inch flame were in 1 to 2·56; in another 2·58; then as 45 : 57·5 :: 2·58 : 3·3—difference 0·11. Comparing a gas from the mixture of Scotch parrot with one from a very fine parrot coal, which indicated 23 by chlorine, and durability 80; the illuminating power by the chlorine process will be 1 to 2·46; by the photometer they were for equal consumption 2·26—difference 0·2. While Dr. Fife admits that the results do not correspond, he maintains the correctness of the methods, and contends that the exceptions, instead of showing inaccuracy, tend to prove its accuracy. With a view to ascertain its correctness, two gases were mixed as nearly as possible in equal proportions, 30 feet of each; the condensation of one by chlorine was 5·5, the other 23; the durability of the former 50′ 40″, of the latter 80′. By the photometer the illuminating power for equal consumption in the same time was 1 to 4′57; by the chlorine process they should be 5·57—difference 1·0.

An additional quantity of the poorer gas was thrown into the mixture, to diminish still further the condensible matter, and the mixture kept three days; the condensation by chlorine then amounted to 13; durability, 73′ 20″. By the photometer the illuminating power was 2·89; difference, 0·37. The value of the gas from some of the Scotch coals, as compared with English, reckoned equal to one candle, is as follows:—

Coals.	Candles.	Coals.	Candles.
English	1·00	Monkland	1—2·64
Skaterig	1·43	ditto	2—4·81
Mid-Lothian	1—2·51	Wemyss	1—4·28
ditto	2—2·56	ditto	2—4 48
Torryburn	2·59	Arniston	1—3·98
Lesmahago	1—2·90	ditto	2—4·30
ditto	2—3·51		

Dr. Fife considers that any defect in the method does not depend on the inaccuracy in the chlorine process, but on the combustion of gases rich in illuminating matter, not being so conducted as to make them give out the light they should give; and, with these exceptions, he thinks chemists are justified in putting implicit confidence in the chlorine process.

CONSOLIDATED COPPER MINES OF COBRE ASSOCIATION.

Having been requested by a respected correspondent to furnish some statistical information of the progress made in this company since its commencement, we have taken some pains to arrive at the truth; but, from the meagre information furnished in their reports, it is impossible to give all the returns our correspondent requires. With respect to the ore raised, we believe the following is a tolerably correct return:—

Years.	Tons.	Years.	Tons.
1835	3,439	1842	20,145
1836	4,764	1843	20,255
1837	6,084	1844	22,526
1838	10,519	1845	17,468
1839	13,615	1846	15,291
1840	14,000	1847	16,591
1841	about 25,000	1848	21,761

With regard to produce there is no correct data to go by. We find in the early part of 1837 it was 20 per cent., and towards the end increased to 26½ per cent. In 1838 it was even higher; but since that period it has decreased, and the average produce now is probably from 15 to 18—some of the parcels realising 22, and even as high as 24, and others under 14 per cent. The costs, and, in fact, the entire financial arrangements, are always kept secret, and sacred from the public—we find, however, that the costs for three months, to March, 1839, in which year 13,615 tons of ore were raised, amounted to 37,832*l.* 8s. 5d., or at the rate of upwards of 150,000*l.* per annum. From January to April, 1840, they amounted to 50,790*l.* 5s. 5d., or at the rate of 203,000*l.* a year—in this year 14,000 tons of ore were raised. In 1845, when 17,468 tons were raised, the entire costs for the year were 183,092*l.* 4s. 2d. The dividends declared have, as far as we can discover from the reports, been as follows:—

Date.	Per Share.	Total.
1839—January	£2	£24,000
June	2	24,000
1840—May	2	24,000
August	1	12,000
1841—January	3	36,000
April	1	12,000
June	2	24,000
July	2	24,000
October	2	24,000
1842—January	2	24,000
July	2	24,000
1843—August	1	12,000
1844—April	1	12,000
August	1	12,000
1845—August	1	12,000
1846—February	1	12,000
1848—January	1	12,000
August	1	12,000
1849—February	1	12,000
July	3	36,000

Making a total of 32*l.* per share, or 384,000*l.*, while there has been paid up 40*l.* per share on 12,000 shares, or 480,000*l.* Beyond these particulars we have no data by which we can convey further information.

GIGANTIC MONOPOLY.—An association, generally known under the name of the Cape Breton and Nova Scotia Mining Company, as tenants of the Crown and of his late Royal Highness the Duke of York, are lessees of all the mines and minerals in the province of Nova Scotia Proper, and the island and county of Cape Breton. The lease is for 60 years from 1827, at a fixed rent of 3000*l.* a year, with the condition that the maximum quantity of coal (since increased to 6500 tons) shall be raised annually, and a royalty of 2s. per chaldron be paid for all beyond that quantity. The company, which also possesses 14,000 acres of land, had in 1845 only four collieries open and at work—two in Nova Scotia, and as many in Cape Breton. In reciting these details we, as well as our readers, cannot omit to remark the injurious magnitude of such gigantic monopolies as the one before us. In this case it covers an extent of more than 12,000,000 of acres, or three times the size of Wales. It is scarcely necessary to say, that its tendency is to impoverish the people, and to destroy all energy in cultivating the abundant natural resources of a fine country. On the continuance of such a deplorable system, the rival coal proprietors of the United States may well found their calculations of a remunerative internal trade in coal, with even greater certainty than on the influence of tariffs and the restrictions of international regulations. A singular statement of fact is connected with this subject—that the steam-boats which run into Chignecto Bay are impelled by coals imported from Great Britain—actually passing over the coal strata, which the inhabitants of Nova Scotia are not permitted to open; and up to the present hour they are compelled to pay the price fixed by a single company for all the coals they consume.—*Edinburgh Review.*

PROFITS FROM COAL MINING.—We are told, on the best authority, that the profit is much less, on the whole, than might have been supposed. So great, indeed, is the hazard attending this kind of property, that it has never been possible to obtain an insurance against fire, water, or any other accident. Mr. Buddle, a person of great experience, stated, that although large fortunes have been made in a few fortunate cases, 10 per cent. has not been realised on the average, at simple interest, without allowing any extra interest for the redemption of capital; and the author of this volume thinks that the experience on the American side of the Atlantic during the last five and six years coincides with this view. Mr. Clayton also stated, in 1800, that in his opinion the average profits of coal mines were inadequate to the employment of so much capital as they required, and to the risk.—*Taylor's Statistics of Coal.*

THE EXPANSION OF LIQUIDS BY HEAT.

BY W. J. MACQUORN RANKINE, C.E.

Having been lately much engaged in researches involving the comparative volumes of liquids at various temperatures, I have found the following formula very useful:—

$$\text{Log } V = B t + \frac{C}{t} - A$$

Log V represents the common logarithm of the volume of a given mass of liquid, as compared with its volume at a certain standard temperature, which, for water, is the temperature of its maximum density, or 4° 1 centigrade, and for other liquids 0° centigrade.

t is the temperature measured from the absolute zero mentioned in my paper on the Elasticity of Vapours, in the *Edinburgh New Philosophical Journal* for July, 1849, and is found by adding 274°·6 to the temperature according to the centigrade scale.

A, B, and C, are three constants, depending on the nature of the liquid, whose values for the centigrade scale, corresponding to water, mercury, alcohol, and sulphuret of carbon, are given below:—

	A.	Log B.	Log. C.
Water	0·4414907	$\bar{4}$·8987546	1·7890286
Mercury	0·0229130	$\bar{5}$·9048766	$\bar{1}$·3703897
Alcohol	0·2615033	$\bar{4}$·8414452	1·2893056
Sulphuret of Carbon	0·2540074	$\bar{4}$·8483872	1·2192054

The data from which the constants have been computed have been taken from the following authorities:—For water, from the experiments of Hallström; for mercury, from those of Regnault; and for alcohol and sulphuret of carbon, from those of Gay-Lussac. As the experiments of M. Gay-Lussac give only the apparent expansion of the liquids in glass, I have assumed, in order to calculate the true expansion, that the dilatation of the glass used by him was ·0000258 of its volume for each centigrade degree. This is very nearly the mean dilatation of the different kinds of glass. M. Regnault has shown that, according to the composition and treatment of glass, the co-efficient varies between the limits ·000022 and ·000028.

Annexed are given tables of comparison between the results of the formula and those of experiment. The data from which the constants were calculated are marked with asterisks.

The table for water shows, that between 0° and 30° centigrade, the formula agrees closely with the experiments of Hallström, and that from 30° to 100° its results lie between those of the experiments of Gay-Lussac and Deluc. The experiments of Gay-Lussac originally gave the apparent volume of water in glass, as compared with that at 100°. They have been reduced to the unit of minimum volume by means of Hallström's value of the expansion between 4°·1 and 30°, and the co-efficient of expansion of glass already mentioned.

In the fifth column of the table of comparison for mercury, it is stated which of the experimental results were taken from M. Regnault's own measurements on the curve, representing the mean results of his experiments, and which from his tables of actual experiments, distinguishing the series. In the experimental results for alcohol and sulphuret of carbon, the respective units of volume are the volumes of those liquids at their boiling points, and the volumes given by the formula have been reduced to the same units.

EXPANSION OF WATER.

Temperature on the Centigrade	Volume at 4° 1 C., according to The Formula.	Volume at 4° 1 C., according to The Experiments.	Difference between Calculation and Experiment.	Authorities for the Experiments.
0	1·0001120	1·0001082	+·0000038	Hallström.
*4·1	1·0000000	1·0000000	·0000000	ditto
10	1·0002234	1·0002200	+·0000034	ditto
20	1·0015668	1·0015490	+·0000178	ditto
*30	1·0040245	1·0040245	·0000000	ditto
—	—	1·0041489	—·0001244	Deluc.
40	1·00750	1·00748	+·00002	Gay-Lussac.
—	—	1·00774	—·00024	Deluc.
60	1·01718	1·01670	+·00048	Gay-Lussac.
—	—	1·01773	—·00055	Deluc.
80	1·03007	1·02865	+·00142	Gay-Lussac.
—	—	1·03092	—·00085	Deluc.
100	1·04579	1·04290	+·00289	Gay-Lussac.
—	—	1·04664	—·00085	Deluc.

EXPANSION OF MERCURY.

Temperature on the Centigrade Scale.	Volume as compared with that at 0° C., according to The Formula.	Regnault's Ex.	Difference between Calculation and Experiment.	Remarks.
* 0	1·000000	1·000000	·000000	Curve.
90·22	1·016333	1·016361	—·000028	Series I.
100·00	1·018134	1·018153	—·000019	Curve.
100·52	1·018230	1·018267	—·000037	Series I.
*150.00	1·027419	1·027419	·000000	Curve.
198·79	1·036597	1·036468	+·000129	Series II.
203·07	1·037786	1·037805	—·000019	Series IV.
205·57	1·037905	1·037910	—·000005	Series III.
*300·00	1·055973	1·055973	·000000	Curve.

EXPANSION OF ALCOHOL.

Temperature on the Centigrade Scale.	Volume as compared with that at 78°·41 C., according to The Formula.	Gay-Lussac's Ex.	Difference between Calculation and Experiment.
3·41	·91795	·91796	—·00001
*18·41	·93269	·93269	·00000
33·41	·94803	·94799	+·00004
*48·41	·96449	·96449	·00000
63·41	·98183	·98210	—·00027
*78·41	1·00000	1·00000	·00000

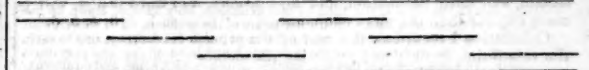
EXPANSION OF SULPHURET OF CARBON.

Temperature on the Centigrade Scale.	Volume as compared with that at 46°·60 C., according to The Formula.	Gay-Lussac's Ex.	Difference between Calculation and Experiment.
*—13·40	·93224	·93224	·00000
+ 1·60	·94768	·94776	—·00008
* 16.60	·96417	·96417	·00000
31·60	·98163	·98163	·00000
* 46·60	1·00000	1·00000	·00000

The advance of iron-working in this country affords us a wide subject for gratulation. In the history of the world and the progress of the human understanding, in comparing the fortune and state of different nations, it is worthy of remark that their iron-works seem, in some measure, proportioned to their intelligence, and to the advancement of reason, and knowledge, and intellect among them. When we consider iron in this point of view, and as the agent by which man, in the variety of its uses and the numerous wants that it supplies, acquires power, usefulness, and enjoyment, not otherwise within his reach, it must acquire with us far increased importance. This most valuable metal may, indeed, be called almost the direct agent of man in whatever he undertakes. In agriculture, manufacture, the building of ships, &c., this was early seen, and, therefore, its use is of very high antiquity, although not so remote, we have reason to believe, as that of either gold, silver, or copper. The inferior brilliancy of its colour may, perhaps, in some degree, account for this circumstance, as well as the greater skill required to obtain it from its ores, and apply it to purposes of art. While gold and silver glitter often in their native state, and the ores of copper are of brilliant colour, the less apparent, but more useful, iron in its ore or native state holds out few of these lures to the finder. The native colour is still grey, and it is found in masses sometimes of meteoric origin; it also occurs in the state of pyrites, magnetic ironstone, ochry ironstone, &c., &c. It is, as we know well, a malleable and ductile metal, susceptible of very high polish, especially when united in a peculiar manner with carbon, in which state it is called steel; and this most useful combination must, we suppose, be of remote origin, for iron is mentioned repeatedly in the Pentateuch as employed for the fabrication of swords, knives, and various other sharp-edged instruments. We may estimate in some degree the value that was then attached to it from an expression in the eighth chapter of Deuteronomy, where Moses tells the Israelites, in his descriptive eulogy of the Land of Promise, that it is "a land whose stones are iron, and out of whose hills they may dig brass." An illustration of the same fact, at a later date, occurs in the Iliad, where Achilles proposes a ball of iron as one of the prizes to be distributed at the games instituted in honour of Patroclus. Within a few centuries after this, the working of this metal seems to have arrived at much perfection, as Herodotus speaks of a saucer of iron, very curiously inlaid, that was presented by a king of Lydia to the Delphic oracle, and adds, that "it is of surprising workmanship, and as worthy of observation as any of the offerings preserved at Delphi."

BRAGGS'S ATMOSPHERIC RAILWAY SYSTEM.

We have during the week had an opportunity of inspecting a model of an atmospheric railway, on a plan differing from any which we have yet had occasion to notice, and which has been patented by Mr. Braggs, bathkeeper, Pentonville. The action of the atmospheric pressure is as directly on the piston and carriage attached, as if there was a longitudinal valve; while the evils of the latter appendage are avoided by the use of close tubes. The principle is certainly simple, and the patentee is exceedingly sanguine that, if ever railway propulsion is carried out by atmospheric means, it must be upon the same, however the details are modified. It may most appropriately be termed the air-gun system, it being precisely on the principle of firing a bullet from a gun; and, in describing it, we shall give the data and dimensions, not of the model, but of a working line, as proposed to be laid down by the patentee. It consists of a series of cylinders, 9 in. diameter, with pistons laid down between the rails, throughout the line; each cylinder is 25 feet long, closed at both ends, and the piston has a rod on each side working through stuffing-boxes in the covering plates. Each of these cylinders is connected with a continuous exhaustion tube, laid down on both sides of the line, and has also a valve at each end opening outwards. A rack, or ratchet bar, extends the whole length of the piston rod, outside the cylinder, and is firmly attached to it at each end, so that it moves with it. While no train is running, the rack and piston-rod are locked; but on exhaustion taking place, and a train advancing, a catch on the under frame of the front carriage unlocks the rack, into which a pall or detent takes at the instant that another catch-piece opens the valve at the end of the cylinder, and admitting the air behind the piston, it, with ratchet-bar and train, is advanced 25 feet, when it passes on to the rack of the next cylinder, and the operation is repeated, keeping the train continually in gear and in motion. The cylinders are not placed in a continuous line, one behind the other, which would prevent the action of the piston-rods, but are arranged as follows:—



By this means it will be seen that the carriage is always taking an impulse from a foremost cylinder before it leaves the hinder one, and in fact at that moment is receiving a double amount of propelling power. The instant a piston has travelled the length of the cylinder with the train, it is immediately locked at the other end, and the exhaustion takes place on the contrary side of the piston, ready for a return train, as the patentee proposes to work with a single line of rails, with off-setts, or sidings, at every 10 miles, to allow of passing trains going in a contrary direction; and these arrangements, with stationary steam-engines at every 10 miles, he calculates he could complete it for 5000*l.* per mile. We have thus endeavoured to give a clear description of the plan, as being certainly more reasonable than many of the atmospheric abortions which have been before the public; how far it could be economically carried out in practice we leave to others to form their own opinion. The actual results to be obtained can only be ascertained by a full-sized experiment, of say half a mile.

IMPROVEMENTS IN RAILWAYS.

The following are the particulars of a patent which has been obtained by Mr. Osborne Reynolds, of Dedham, Essex:—

1. Mr. Reynolds' improvements have for their object; firstly, to diminish the risk of fracture of the chairs on which the rails of railways are laid. This he effects by constructing them of a compound of metals of greater strength and durability, and at the same time of much less weight than those materials heretofore employed for the purpose. His improved chairs are made of cast-iron, with ribs or knuckles, or other strengthening pieces of wrought-iron, incorporated, more or less, therein in the process of casting. The chair may be of any approved form, and the wrought-iron pieces may also be of any forms most likely to accomplish the object in view. Two several exemplifications of this system of construction are given, and illustrated by drawings. In one, the wrought-iron pieces are wholly imbedded in the mass of cast-iron. In the other, there are pieces of wrought-iron also wholly imbedded in the cast-iron, but, in addition, a thin plate of wrought-iron is inserted transversely, which is only partly covered with cast-iron, part being left exposed to view. A chair of this description is stated to be well adapted for the joints of rails where great strength is particularly desirable, and where the interposition of such thin plates between the abutting ends of two rails is of no consequence. The pieces of wrought-iron are directed to be thoroughly cleansed from rust, or tinned, or prepared with borax or sal-ammoniac, or other suitable material, before the cast-iron is poured over them.

2. The patentee next describes an improved mode of constructing the keys or wedges used for fastening rails in the chairs, whereby their ordinary tendency to become loose after they have been for some time in use, is much, if not altogether, counteracted, and they are prevented from falling out under any circumstances. A recess is formed in the outer face of the key, and a layer of vulcanised caoutchouc (or other suitable elastic substance) is inserted at the back or bottom of that recess. Then, there is a block which fits loosely into the recess, and bears against the vulcanised caoutchouc (to which it may for convenience sake be cemented, but so as not to interfere materially with the elastic action of the caoutchouc). A detent or catch is raised on the fore end of this block. When first inserted in the chair, the pressure of the side of the chair on this projecting catch of the block, forces that block inwards upon the vulcanised caoutchouc, till the key is driven so far that the catch passes free of the side of the chair, when the elastic spring of the caoutchouc immediately throws out the block behind the back of the chair, and thus not only makes the key fast and tight, but effectually prevents its retroceding or loosening under the severest jars or concussions. Instead of using one detent or projecting piece only, several such detents or projecting pieces may be employed in combination with corresponding projections on the face of the part against which the key is to be pressed, when in its place—that is to say, projections to take into the hollow spaces between the detents. Keys of this sort will be found useful for various other purposes.

3. Mr. Reynolds describes, thirdly, an improved mode of constructing splint-pieces, and applying them to strengthening the joints of rails. It consists chiefly in making them of wrought and cast-iron, the one imbedded in the other, as before described, with a facing of vulcanised caoutchouc; and in fastening the rails and splints by means of the same chair.

Claims.—1. I claim the construction of the chairs used for supporting the rails of railways, partly of cast-iron and partly of wrought-iron, more or less, incorporated or imbedded in the cast-iron, as before exemplified and described.—2. I claim the making of the keys for railway chairs with elastic detents or latches, as before described.—And 3. I claim the making of the splints used for strengthening the joints of rails of a combination of vulcanised caoutchouc, or other suitable elastic material, with cast or wrought-iron, as before described, and also the method of fastening rails and splints by means of one and the same chair.

PROGRESS OF THE BRITANNIA BRIDGE.—The following note has been received, in answer to some inquiries which were made of Capt. Claxton, R.N., who is appointed to superintend the floating off of the huge tubes of the Britannia Bridge, preparatory to their being hoisted to their places between the towers:—"The lifting process goes on daily, early and late, at the rate of 6 ft. per diem; that the tube was raised 27 ft. from the 1st to the 5th inst.; and that, in all probability, it will be in its place by the end of next (now the present) week. I shall be most happy to afford any facilities in my power; but the whole lifting process is with Messrs. Clarke and Amos." The three additional tubes are either completed, or nearly completed: that known as the G tube, standing next to the piers on the Carnarvonshire shore, is perfected—the scaffolding on which it rested has been cleared away, and the mass will be floated in the course of a few days. There is now a clear height of 60 ft. beneath the tube now raising at high water, so that small vessels begin to pass under it. Its permanent level will be 100 ft. above high water.—*L'pool Stand.*

ORIGIN OF BILLS OF EXCHANGE.—It is to the Jews that we owe the invention of bills of exchange. Often obliged to leave a country at the shortest notice, condemned by the most ferocious, intolerance to a wandering life, they had invented that easy mode of carrying about their riches, as on their expulsion from Portugal. The invention of the bill of exchange has been fixed by some historians at that period—that is, about the beginning of the 16th century; but there existed at Venice, in 1272, a special law upon that sort of contract. From the laborious researches of Messrs. Blanqui and Nouguier, it would appear that the exact date of this Jewish invention must re-ascend as far as their expulsion from France by Philippe Augustus, 1181. Montesquieu says himself, "They had from time immemorial, in their jurisprudence, models of letters of purchase, letters of donation, letters of exchange; these were not unlike our bills of exchange."—*Louis Blanc.*

Original Correspondence.

COPPER SHEATHING.—No. XIV.

Sir,—I should be glad to hope that my answer to "A Roaster Man's" question, in your last, would render the service he expects; but lose no time in sending it, at all events.

My objection to putting into the seventh process "ores with their concomitants," does not so fully apply to "native malleable copper" freed from *adhering* concomitants. But neither is it, even there, quite inapplicable. Malleability is, in the first place, a mechanical property, compatible with varying chemical composition; and in the next place differs, in degree, in different samples, according to different kinds and quantities of alloy. Hence although, where mere toughness is required, clean native copper may be sufficiently fined in the operations of roasting and refining; yet where durability is also wanted, certainty of chemical constitution and uniformity, or homogeneousness of composition (to prevent electro-chemical reacting points and patches), are of prime importance: and must not the first be made uncertain, and the second more or less hindered, by the introduction of new matter, so far forward as the seventh process; notwithstanding the violent subsequent stirring and poling in the refinery? On the other hand, one would, of course avoid, needlessly, throwing back malleable copper into the second or third smelting; the kind and proportion of impurity might decide it.

A more practical answer may perhaps apply, also, to ores rich in oxides and salts; when he (or any one else) will furnish you with the descriptive list of such ores and their usual concomitants; and some of my objections he may anticipate meanwhile, from the following questions.

Without regarding the ore question as at all concluded, but still hoping for the observations of "T. H. S." and others, we may open a wider field of discussion, by proceeding with that of calcination. The terms of first, second, and third calcination, and first, second, and third fusion, will be more explicit than the mere enumeration of "process 1, 2, 3, 4, 5, 6."

Calcination I regard as the root of the process (hitherto), evaporating the volatile impurities; and oxidating the metals which are not volatile, to slag off in the meltings, by the reactions of compound affinity. The first, or ore, calcination, being chiefly an evaporating process; the second and third principally oxidating. But our inquiries, here, may be limited to the evaporations; the oxidations being more conveniently considered in connection with the melting processes.

It appears, from the old accounts, that the succession of calcinations (and alternate fusions) was greater than enumerated by Mr. Vivian; and the same (without the intermediate fusions) seems to be still the practice in some of the continental works.

Antimony, perhaps the most troublesome ingredient to calcine off, is, so far as I know, the most pernicious alloy with copper, both to its malleability and its chemical character and durability. It is certainly readily scorified off, with lead, in the refinery; but the lead can only act upon what it actually touches, and a small quantity of lead can hardly pervade the whole pool of copper, stir it as you may; and much lead is objectionable on several accounts. It seems, therefore, desirable to get rid, as much as possible, of the antimony in calcination. I have found this metal, in considerable proportion, in bad sheathing (but under rather questionable circumstances, so that a set of experiments now on hand may lead to a repetition of the analysis by a more decided process).

To proceed with our questions on these points. It is evident enough why the number of operations has been lowered; but

1. What led the old smelters to employ so many repetitions of those alternate processes?

2. What special advantages do the Germans reckon upon, from the succession of calcinations without alternate fusions, instead of one longer calcination?

3. What is believed to take place during the cold storing of calcined ores, either between the successive calcinations, or before fusion?

(On these two points may I ask the particular attention of Germanicus.)

4. What means have been adopted to compensate the advantages of numerous calcinations; and does the granulation, by running the melted coarse metal into water, materially forward the oxidation by the hollowness and porosity it produces, beyond the old method of hand crushing?

5. To what extent is the time of ore calcination varied, to suit the different qualities of ore? This is recommended in "A Roaster Man's" third answer; but he had no occasion then to say how far it is practised.

6. What different materials are evaporated in the successive calcinations? Are the sublimates in the respective flues, as well as that of the roaster, examined, with a view to determine this point, in quantity as well as kind?

7. Antimony especially; where is that chiefly found volatilised?—in the second, third, or roaster flue?

Of the roasting I do not enquire further here, considering that an independent operation, to be enquired into in connection with the refinery, after the course of intermediate meltings.—J. Prideaux: *Plymouth, Oct.* 11.

ECONOMICAL CONSUMPTION OF FUEL ON RAILWAYS.

Sir,—The present is an age of calculation and investigation—an era when the resources of ingenuity and skill are tasked to their utmost value, and the ability of railway directors is being probed by anxious and speculating shareholders, in order to effect a retrenchment of their expenditure within the narrowest limits. Any diminution in the working of those grand thoroughfares of public traffic must be advantageous to the community, and when that reduction consists in the mitigation of the expenditure in such an important item as that of coke, it may justly be regarded as a boon to the capitalist embarked. I shall now venture to draw a comparison between the expenditure of coke in the present system of locomotive working, and that which would be effected by the economical class of engines perfected by M. Hackworth, which I have formerly described. For this purpose I have taken the consumption of coke on a few of the principal railways, as published in their reports:—

London and South-Western Railway	£17,825	12	6
London and Brighton Railway	23,207	0	0
York, Newcastle, and Berwick Railway	52,000	0	0
Eastern Counties	43,262	18	8
York and North Midland Railway	18,505	8	0—£154,800 19 2

From this data I find that the saving to the London and South-Western Railway, at 25 per cent., would be £4456 8 1¼ annually.
The London and Brighton Railway 5801 15 0 "
The York, Newcastle, and Berwick Railway 13,000 0 0 "
The Eastern Counties' Railway 10,815 14 8 "
The York and North Midland Railway 4456 8 1¼ "

Or, taking them in the aggregate, we have 154,800*l.* 19s. 2d. expended annually for coke on these railways, which, at 25 per cent., would yield 38,700*l.* 4s. 9½d. per annum to the shareholders. Here it must be understood, that I am supposing those railways to be working most effectively with engines of the lightest consumption, although there is no question that, taking the per centage on the aggregate consumption, 30 or 35 would be nearer the true standard. We therefore, have, at 35 per cent., 54,180*l.* 6s. 8½d. saved annually on these railways, affording an increased source of profits and large dividends to the proprietor.

Having taken the consumption of coke on a few of the principal railways as the basis of our calculation, it is obvious that, if this system was worked to its fullest extent, the saving on the whole of the railways in this kingdom would be considerable; I should not hesitate to say less than 200,000*l.* annually in coke alone in the expenses of locomotive working. It is also worthy of observation, that this principle of economical working not only applies to the railways of this country, but also to those extended over the European continent, as well as those on the plains of the western world. The introduction of this economical class of engines, in the present starved and depressed state of the railway system, may justly be said to have achieved a revolution in favour of the capitalist embarked therein; and, when thoroughly introduced and tested to its true value, will effect a change in the aspect of railway matters never before anticipated. A result, such as is shown under the foregoing data, will, I have no doubt, claim the attention of all parties interested in the reduction of the expenses of railway transit; it concerns the engineer equally with the director; the shareholder with the committee of inquiry. To an "Enquirer," writing in the *Railway Times* of 11th August, on the expenditure of coke on the Brighton Railway, I would observe that the foregoing system furnishes him with the key to the secret he wishes to possess—viz.: the liquidation in the expenses of coke to the extent of 40 per cent.

There will also be less delapidation in this engine than the ordinary class, arising partly from the economy in fuel, from those parts exposed to the action of the fire, such as the fire-box and tubes, as well as from the simplicity of the machinery, which will be proved to be no inconsiderable per centage.—Eredus: *Darlington, Oct.* 11.

IMPROVED AIR-ENGINE—BAGGS'S PATENT.

Fig. 1.

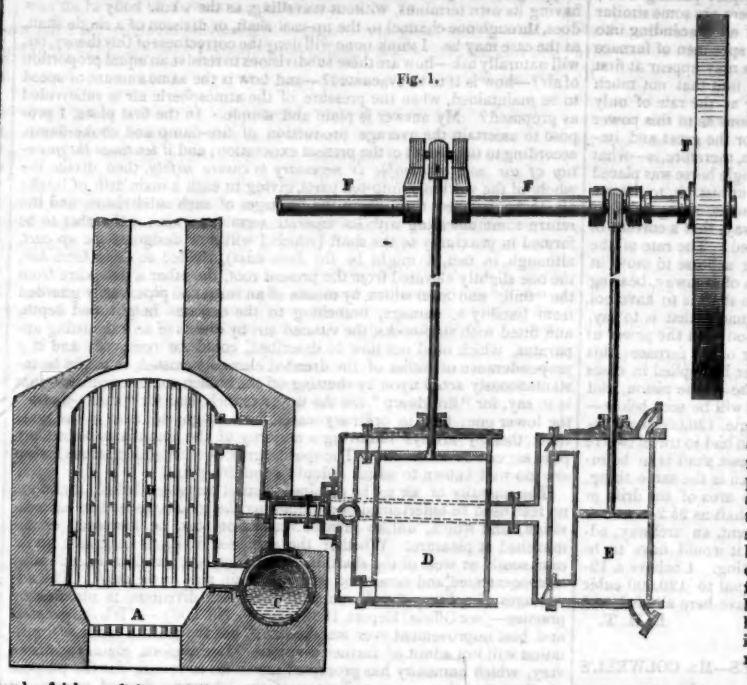
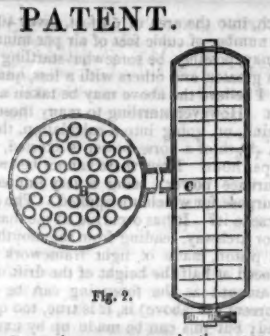


Fig. 2.



Sir,—In my former communication upon this subject I proved, or at least I endeavoured to prove, the great superiority of air over steam, as an economical and passive medium for the generation of mechanical power by heat. In what I had then to say nothing was assumed—nothing was taken for granted but what would bear the test of inquiry, and appeared to stand upon plain and irrefragable evidence. Facts and experiments, the general correctness and authenticity of which are undisputed by the philosophical world, were given as the basis of a simple but a most important investigation; and certainly, if my earnest efforts on that occasion were successful, the argument was carried forward step by step, with a strict regard to the proprieties of ordinary logic, and with a careful attention that no inference to which it might give rise should be tainted by sophistication, or extend, in the slightest degree, beyond the fair and honest limits of inductive reasoning. So much for the inquiry itself; and now with regard to the conclusion to which it has brought us.

I have no hesitation in saying, that if this latter be fairly and impartially examined, it will not fail to stand in the eyes of all true judges as one of the most weighty and important considerations in the whole science of practical mechanics, as at present understood. Commerce and civilization, and the interests of mankind generally, are more involved in the issue of this great question than at first sight appears; for supposing the result arrived at to be true, and that an enormous saving may be effected by substituting air for steam, as the expansive medium in producing motive power, not only are our present facilities of transit by sea and land incalculably extended—not only is the capitalist, who has laid out his money in iron roads and steam-ships at once placed in a better position than before, and assured of that return to which he is fairly entitled by his *bonâ fide* hazard in the cause of public improvement, but a new stimulus is given to commercial enterprise, the bountiful gifts of Nature and the productions of art are more equally distributed, and a powerful momentum is added to that wave of light and intelligence, which, by the accumulated efforts of the age, is now being propagated from the great centres of civilization to the most remote districts of the habitable globe. I say that such are, or will be, the inevitable consequences, supposing that the position here assumed is a correct one; and if it be otherwise, why then let the negation be proved! The case is plainly set forth both in subject and argument, and what is obviously incorrect, or illogical, is easily refuted. But to show (if I may be allowed to do so) with what an even and unprejudiced hand I have *endeavoured* to deal with the facts that came before me, and to substitute at the same time, in one particular of my demonstration, the actual results of practice for the minimum of theoretical anticipation, I will refer back to the fourth computed result, which I offered in my last letter, in evidence of the superior economy of air over steam for the purpose named. It was there shown that, in accordance with the principles of the atomic theory, the 1600 lbs. of coke would require for combustion 4266 lbs. of oxygen gas, or 204,135 cubic feet of atmospheric air, producing, at the temperature of 2136° Fahr., a total expansive effect of 816,540 ft. It was proved that this was *the smallest possible quantity* which could pass through the furnace to produce the effect named; and no attempt was made on my part to extend the value of that effect by taking refuge in probabilities, although it must have been tolerably clear to your philosophical readers, that either in quantity, or temperature, there was an obvious deficiency in the estimate. I chanced, however, the other day to stumble over the following statement in *Bourne's Treatise on the Steam-Engine*, 3d edition, p. 44:—"It has been found, by experiment, that 200 cubic feet of air, of atmospheric density, are required for the complete combustion of 1 lb. of coal;" and from this we have the proportion as 1 : 200 :: 1600 : 320,000. The expansive effect being four times this last-named quantity, at the temperature of 2136°, is equal to a total of 1,280,000 cubic feet. I am, therefore, I conceive, fully justified now in extending the theoretical minimum previously obtained to this, the actual result of experience.

If we now recapitulate the more prominent conclusions already arrived at, it will be seen that the specific effect, or serviceable enlargement of bulk expressed in cubic feet, which will result from the application of a given quantity of heat to the expansion of air on the one hand, and the generation of steam on the other, is as follows [See *Mining Journal*, Sept. 15]—

	AIR.	STEAM.
By four separate calculations, each one founded on different data	1,675,462 1,355,434 1,363,658 1,280,000	345,000

The average of the four numbers to the left is 1,468,893, which, being divided by 345,600, gives us at once the relative value of air and steam, as media of expansion for producing motive power by caloric. The ratio is absolutely 4·25 to 1, or, in round numbers, no less than 4 to 1 in favour of atmospheric air. Such a result appears to be almost too great for credence; yet I see no mode of evading it. Here it stands, and seems to stare us in the face as one of those great facts in nature, whose existence and general character, instead of being weakened by close examination, become the more positive and confirmed in their reality the more they are subjected to the ordeal of reasoning and the test of inquiry. But why, it may be asked, if air is so much more economical for this purpose than steam—why is it that the latter has retained its supremacy over a period of so many years, and preserves it even now? Because there are certain features in the physical constitution of the two bodies now under discussion, which, in an early stage of mechanical advancement, would certainly tend to the adoption of steam as the preferable agency, both on account of its striking powers and facile application; and this opinion, once deliberately formed, and sanctioned by high authority, as well as extensive practice, would naturally absorb in its progressive advances towards perfection, the majority of those efforts which might be afterwards manifested in the general science of producing motive power by artificial means. And so we find it; for at least ninety-nine hundredths of the engineering talent of this empire—nay, of the whole cultivated world, are exclusively directed, when they chance to be employed upon this subject at all, to the improvement of the *steam-engine*. We are not to be surprised, therefore, at finding this wonderful machine in its present pre-eminent condition. It is the accumulated creation of whole centuries of toil. The most fertile invention, the most profound intellect, have expended their energies in the study of its principles and the development of its powers; nor is there any portion, however small, of its varied and refined mechanism which has not been the prolific theme of innumerable improvements. The theory of this potent engine has been enriched by the labours of profound mathematicians, and its present practice is built on the broad foundation of hundreds and thousands of costly experiments. No wonder, therefore, that we find it as it is; but it is surely a matter of astonishment, after the achievement of so mighty a result, after such great difficulties had been surmounted by such determined perseverance, that the principal engineering authorities of the day should take such a restricted view of the resources of Nature, or of the powers which have been given to man for applying these resources to his own purposes, as to treat with disregard and obstructive suspicion any attempted innovation upon the existing system. Assumption on the one hand, and limited understanding on the other, have gone far to establish an absolutism in science, as well as in politics; and though the solicited opinion of high critical authority has occasionally saved some needless expense in unimportant matters, yet the history of invention abundantly testifies that it has also been the fruitful means of deferring, in many instances for long periods of time, the practical realization of great public benefits. Declarations, such as I refer to, are too generally given with dogmatical precipitancy, and they are not unapt to be occasionally leavened with feelings of self interest and personal jealousy. Men would be much more likely to steer a correct course, if, in place of depending upon the oracular declarations of other people, they would be at the trouble to collect a few facts for themselves, and use the prerogative of their own private judgment. In the case now before us, the physical constitution of atmospheric air is tolerably well understood, and all men are agreed that, when heat is made to act upon its particles, an enormous force is called into action; and yet, because the application of this simple principle involves a few difficulties, scepticism shakes its prejudiced head, and professes to deem them insurmountable. These remarks are not made without good reason, and I have little doubt that many of your readers will at once subscribe to their general accuracy.

The invention to which I will now call attention, though dependent for its efficacy upon the elastic force of atmospheric air, is yet entirely different in principle and construction to the various air-engines which have, from time to time, already appeared before the public. These latter derive their power most commonly from differential elasticity, resulting from the alternate dilation and contraction of two opposing volumes of imprisoned air; whereas, in the machine which I am about to explain, cold air is being constantly introduced into a hot receiver, and then, immediately afterwards, operates in its expanded condition upon a moveable piston, precisely after the manner of steam in a non-condensing engine. It is not for me, as the inventor and patentee in this matter, to thrust forward a list of unauthenticated statements with regard to its advantages, and so forth; but I will nevertheless state facts to the best of my knowledge, and give the why and the wherefore. My object is substantial truth—not the empty parade of hypothesis; and as the invention will be seen ere long in public operation, I shall be happy to aid in making its principles generally known, by answering *freely* the doubts, or questions, of any of your correspondents. In the annexed diagrams, the same letters refer to the same parts. *Fig.* 1 represents a vertical, and *fig.* 2 a horizontal, section of a stationary land-engine. A is an ordinary fire-grate; B B, a small tubular apparatus, made of copper, for heating the air; C C, a small boiler (the meaning of which will be presently explained); D, the working cylinder; E, the air-pump, or blowing-cylinder; and F F, the crank-shaft, and fly-wheel. The action is as follows:—The fire being lighted, the air within the reservoir is heated, and, in a few minutes, is more than doubled in volume. The engine is then ready to work. The throttle-valve is opened, and the hot air passing through the steam space of the boiler enters the working cylinder, and is cut off at half-stroke, or, better still, at ⅖ths; the remainder of the stroke is accomplished by expansion. In the whole of this proceeding, *rather more than two volumes of heated air are consumed*, and, at the same time, *one volume of cold air is thrown into the reservoir*. The surplus, or available, power at every stroke, exclusive of mere *friction*, is equal to that which would be derived from half the *entire* force of the large cylinder, supposing it to be worked by steam, at a total pressure of 15 lbs. to the inch, cut off at ⅖ths, *and operating against a perfect vacuum*.

The *actual economy*, therefore, which is realised in practice, is two to one in favour of air, and not four to one, as a moiety of the power is employed in pumping cold air into the reservoir; but this clear and positive saving of 50 per cent. in the generation of elastic force by heat will be seen to advance much further in value as we proceed. If the hot air rushed at once into the cylinder, its temperature would be injuriously high. For this reason, it is made to traverse the steam space of the small boiler on the road, where, parting with all *hurtful redundancy* of heat, it generates a calorific equivalent of steam, or surcharges that which is already formed; and it is this mixture, and not the dry air alone, which operates in the working cylinder. The production of steam in the chamber is regulated with the greatest nicety in the following manner:—A horizontal axis runs through the length of the boiler, and is provided with an external pulley; this axis is fitted with a number of thin vertical discs, which dip about half way into the water of the boiler, and are made to revolve therein by giving motion to the pulley. The hot air rushing through the steam space is "wire drawn" between the upper portions of the discs, and carries off the boiling moisture from their surfaces. The amount of moisture, and consequent evaporation, is mainly regulated by the velocity of revolution given to the pulley. I have already, in the course of this letter, made allusion to two engines of a peculiar character, worked by hot air, and in which the motive force is obtained directly from the expansive products of combustion. I may now refer to another, based to a certain extent upon the same principle. In Hall's patent, 1827, a steam-engine is employed, and *hot air is pumped from the flue* into the boiler, in order that it may mix with the steam, and thereby add to its power. Such an arrangement would obviously lead to a positive loss instead of a gain; for the diminution of bulk which the air would sustain in parting with its heat, would not be nearly compensated by the increased volume of resulting steam. This fact must be clear from what has been already stated; and I merely refer to the patent for purposes of comparison. It will be seen that in the new engine figured above, the diameter of the cylinder, for the production of a given horse-power, is greater than where steam is employed; but the reservoir for heating the air occupies only half the space of an ordinary boiler, because only half the fuel is consumed. It is right to observe, also, that the cranks are placed at right angles, in order that the periods of extreme pressure and resistance may approximate more closely than they would do under other circumstances. This effect, tending to an equalisation of forces, takes place to the same degree, whichever way the engine may be turned. I have now only to submit to the understanding of your readers that I have made good the two great points of economy and practicability pertaining to this system of working; and, as I have already occupied so much of your space, I shall defer my further remarks to a future occasion.

Oct. 9. [*To be continued.*] Isham Baggs.

ON THE VENTILATION OF MINES.

Sir,—I have lately (indeed, since I saw your Journal of last week) had an opportunity of ascertaining the quantity of air descending into a mine in this neighbourhood—the depths of the downcast and upcast shafts are each about 140 fathoms, and the area of each 54 feet; the furnace is about 7½ ft. broad, and 9 ft. long, placed between 50 and 60 yards of the bottom of the upcast, in an area of about 60 ft. If my minutes and calculations be correct, as I expect they are, this furnace produces a current in the downcast of 12½ feet per second = 740 feet per minute, or 8·4 miles per

hour; which, into the area of 54 feet, gives 40,000 cubic feet per minute. So large a number of cubic feet of air per minute as 40,000 passing down one shaft may, possibly, be somewhat startling; but there are some similar pits with a greater, and others with a less, quantity of air descending into them; yet I believe the above may be taken as a fair specimen of furnace ventilation. However startling to many these figures may appear at first sight, I think, on going into a calculation, they will find that not much more than $\frac{13}{100}$th of a horse power is exerted, moving at the rate of only 8·4 miles per hour. Now, there cannot be two opinions as to this power (I mean furnace power) being a very limited one for the great and important purpose for which it is applied. The question, therefore, is—what is to supersede it? It has occurred to me that, if a single horse was placed in a drift or archway, leading from the mouth of the upcast pit, to draw a very light piston, made of light framework and canvas, along rails, or guides, placed at half the height of the drift or archway, that a current of as great amount as the foregoing can be produced. The rate of the furnace current (as above) is, it is true, too quick for a horse to move at with a load; but this can be made up by extra area of archway, bearing in mind, in determining the size, that the area of the shaft is to have not less of the horse power applied to it than by the furnace—that is to say, the archway is not to contain more area, in comparison with the power of the horse, than the area of the shaft with the power of the furnace: this found correct, then I would suggest that steam-power be applied in cases where more than a horse power is requisite. The size of the piston, and the rate of its motion, are questions easily solved, as will be seen below—for example, if, instead of 40,000 cubic feet per minute, 120,000 were required in the mine here spoken of, and that the piston had to travel twelve miles per hour, it is plain the velocity in the downcast shaft is to be increased from 12¼ feet per second to 37 feet, or, which is the same thing, from 8·4 miles to 25·2 miles per hour; therefore, the area of the drift or archway would be in the proportion to that of the shaft as 25·2 is to 8·4. To enable the power to keep up a continuous current, an archway, adjoining the *piston archway*, would be required, and it would have to be furnished with doors, which might be made self-acting. I believe a 12-horse-power engine would produce a ventilation equal to 120,000 cubic feet per minute, if placed at the colliery to which I have here alluded, and in the manner I have endeavoured to explain. R. H. T.

Durham, Oct. 9.

PREVENTION OF EXPLOSIONS IN COLLIERIES—Mr. COLWELL'S SCHEME.

Sir,—In attempting to elucidate my ideas of improvement in the mode of ventilating collieries, I also respectfully beg leave to submit to the scientific miners, my views of some existing evils, in order to make my scheme the better understood.

1. In collieries having one, or even two shafts, there is but one inlet, and one outlet for the atmospheric air, which, in some cases, is coursed through all the passages of the mine, whatever the extent of the workings may be.

2. That with the exception of a certain portion of it, which passes the goaves or old workings, being coursed to the dumb furnace, no ready means appear to me to exist of getting rid of gas produced from faults, blowers, &c., in the *interior* of the workings, however extensive the yield of gas, perhaps 500 barrels per minute, which is sometimes suffered to escape into the various driftways, too much reliance being placed in the power of the passing current to dilute it, and *blow* it away. Attempts have certainly been made to discharge them into the "main return," but not effectually in all cases. We will, therefore, suppose the atmosphere of a fiery mine to be tested at four stations, equidistant from each other, including the whole length of air-course, and I have no doubt the result would be—first station, "muddy," second, "thick," third, "heavy," fourth, "fiery," or absolutely explosive! being, I believe, the technical terms for expressing the various conditions of the atmosphere, according to its degree of impurity. It is evident that if the gas arose throughout the mine generally, in an equal proportion, and perfectly independent of "blowers," which are known to be much heavier in some places than in others, the air must become more impure as its journey is increased; hence, some are permitted to work with naked candles in one part of a mine, whilst others, in a more impure part, are compelled to use the Davy lamp.

3. That if a greater amount of speed could be obtained, so long as the present excessive lengths of air-course exist, and consequent excess of impurity, the assumed safety of the Davy lamp would be removed, it being understood that it is liable to explode in a fiery atmosphere, when meeting a current of air exceeding the speed of from 3 to 4 ft. per second; therefore, any plan to increase the current should also *shorten the air-course*. If this can be accomplished with one shaft only, *which has never yet been attempted*, I believe it will be acknowledged the excavation might safely be carried on to any extent; yet, with the blessing of Providence, I hope to be enabled to prove this can be accomplished; and with this important addition, *to dispense with the main brattice*, so far as it is at present applied, for the purpose of separating the down from the upcast air, thereby at once forming double the area for the admission of pure air, and saving the present enormous expense of keeping that troublesome adjunct in repair. Listen to this, ye wealthy coalowners; I am not desirous to touch your pockets by my suggestions, but I am truly desirous to save *human life!!* I am quite prepared to be looked upon as a theoretical enthusiast, but experience has taught me that enthusiasm and perseverance is needed in so vast an undertaking as I have embarked in, prompted thereto by the dictates of humanity; and the more opposition I meet with, the more cheerfully will I persevere in my project, until it is fairly determined whether I am right or wrong;—but to proceed.

It has been shown in evidence, that if the speed of air be restrained to 3 ft. per second, according to the estimated quantity admitted to produce such a result, in mines having but one shaft, and yielding 20 per cent, of gas, about 13 acres only could be excavated in safety; if 10 per cent., 26 acres; if 5 per cent., 52 acres; if 1 per cent., then 260 acres, or thereabouts. Still, notwithstanding these facts being made apparent, not the slightest regard has been paid to the subject, but, on the contrary, many *fiery seams* have been worked, to an enormous extent, with *one shaft only*. I would, therefore, ask, who need feel surprised at explosions occurring? It is also too clearly and painfully demonstrated, that the ill effects of an explosion are spread throughout the entire workings, and more lives have been lost from suffocation than from the first cause; in fact, it has been estimated at 3 to 1. "Choke-damp" is said to have destroyed life in some cases as instantaneously as a gun-shot, or rifle ball; still the removal of fire-damp only has hitherto been the principal consideration. By the parsimonious system of working collieries, the means of respiration is too frequently cut off from all survivors of the shock; and in the absence of any means yet adopted to remove the foul vapours, so as to descend a pit to the rescue of any who might have made their way into a sufficiently clear air to breathe, they have, in some cases, been literally *starved to death* before human aid could be afforded them, notwithstanding the many praiseworthy and dangerous attempts made for their deliverance.

These enormous evils I am sincerely desirous to remedy; and, it being for the national good, should I succeed in this laudable attempt, I shall at least deserve the good opinion of my fellow-countrymen; but if, on the other hand, I should have overrated the results of my project, all those who are more immediately interested in the subject are requested to withhold their reproaches, as a failure in a purely philanthropic attempt does not merit such a reward; and in offering an explanation of a long-studied scheme, which has produced many a restless night and tedious day to mature, involving, as it has done, a personal inspection of some of the most fiery mines, I trust it will be received in the same spirit with which it is proffered, notwithstanding the warmth of expression already elicited by "censure undeserved," and strengthened by what I conceived to be a want of fellow-feeling on the part of managers towards the employed,

I am fully aware there are a great variety of mines, and the means of ventilating them are almost as various, so that no one system, *without modification*, can apply to all. I, therefore, in the first instance, suggested to the Right Hon. the Secretary of State for the Home Department the advantages of cleansing the air at intervals of space, and permitting the cleansed air to pass on its destined course—see *Mining Journal* of 28th July last, in which, and in subsequent Numbers, I endeavoured, by avoiding technicalities, and in plain simple language, to show how I conceived the deleterious gases might be taken off. This much of my scheme, notwithstanding the importance of the subject, I have sought in vain to be put to the test, as involving the first principles of the whole; still this has nothing to do with the shortening of the air courses, so essentially necessary in many collieries; but it would materially assist in reducing the cause of danger. The work in many mines, I have no doubt, has been badly laid out to admit of any new mode of ventilating them; still, as it is well known, the air in mines is perfectly ductile, and may be coursed to any termination. In those collieries which I have visited, in the north of England, I am convinced there would be no difficulty in subdividing the interior into as many parts as might be desired, and by altering the various stoppings, &c., separate sets of drifts could be established, each compartment having its own terminus, without travelling, as the whole body of air now does, through one channel to the up-cast shaft, or division of a single shaft, as the case may be. I think none will deny the correctness of this theory, but will naturally ask—how are these subdivisions to receive an equal proportion of air?—how is it to be evacuated?—and how is the same amount of speed to be maintained, when the pressure of the atmospheric air is subdivided as proposed? My answer is plain and simple. In the first place, I propose to ascertain the average production of fire-damp and choke-damp, according to the extent of the present excavation; and if *ten times the quantity of air now obtainable is necessary to ensure safety*, then divide the whole of the workings into ten parts, giving to each a main drift of intake air, to be coursed throughout the passages of such subdivision, and the return communicating with its separate terminus—viz.: a chamber to be formed in proximity to the shaft (which I will now designate the *up-cast*, although, in fact, it might be the *down-cast*), divided so as to form *two*, the one slightly elevated from the present roof, the other a deflexure from the "thill," and from which, by means of an insulated pipe, easily guarded from liability to damage, branching to the extreme height and depth, and fitted with stop-cocks, the vitiated air, by means of an exhausting apparatus, which need not now be described, could be removed; and if a preponderance of either of the dreaded elements existed, it might be instantaneously acted upon by shutting off the branch communication—that is to say, for "fire-damp" use the upper branch, and for "choke-damp" the lower one; but, in ordinary cases, both might be used at the same time, thereby always removing a majority of the impurities before any pure air can be taken out. The specific gravity of these dangerous bodies are too well known to admit a doubt upon this point.

The quantity of air to be obtained almost surpasses belief; therefore, no fear need be entertained of maintaining the required speed in each division, and which, unlike furnace ventilation, can be increased or diminished at pleasure. Whether the proposed divisions be situate north, east, south, or west of the shaft, it matters not; the terminus to each must be concentrated, and connected with one main pipe *in the shaft*. The advantages of *splitting* the air, so as to form *two* divisions, is manifest by practice—(see Official Report, 1835, page 36, No. 500):—"It is the greatest and best improvement ever was known;" but the present mode of ventilation will not admit of further divisions. I, therefore, claim the discovery, which humanity has prompted me so far to reveal, for the purpose of alleviating the present sufferings of the labouring class of miners—at least, such is my anxious desire in thus far giving publicity to my project; and, if I succeed in accomplishing *their safety*, my personal advantages are but of secondary consideration. Still, it would be unjust and dishonourable for any person to pirate my ideas for *individual* benefit.

Much as I admire the sentiments expressed by Mr. Jones, in general terms, I beg to differ with him on some points. For instance, he says—"To speak of any ventilator as a panacea for explosions is fallacious; the ventilator may be perfect in its action, and yet the stoppage of an air-course, a fall from the roof, the opening of a door, nullify its whole effect." These are arguments which I believe apply to the present mode of ventilation; but he goes on—"It would be just as feasible to cure the defects of a long line of shattered and leaky atmospheric railway, by working an exhausting piston at one end, as to remedy the internal disorders of a colliery by drawing out the air at the pit's mouth." I consider this simile to be far-fetched and inapplicable. By what means, I would ask, is the air now drawn out at the pit's mouth; and whether the same argument would not apply to the long-cherished system of furnace ventilation? It is not to cure the disorders of a colliery that should be so much studied as the means of preventing such disorders occurring. Your correspondent is evidently a man of talent; but I fear the prejudice existing amongst miners generally has overpowered its application in the right direction. Some of the learned and experienced witnesses before the various committees of inquiry have spoken of dividing the risk of danger by working the men in gangs, distant from each other; again, it has been suggested, and amongst others by your able correspondent (Mr. Jones), to work them in double shifts—one set by night, another set in the day; but if the interior of a mine can be securely subdivided into 6, 8, or 10 parts, if necessary, as I propose; if men were employed in each, the dreaded evil must be lessened; and if an accident should occur in one division, it could not be extensive, and the men would not seek in vain for pure air to breathe, as they now do in such cases; they would repair to the entrance door leading to an adjoining division—such door being necessary at all times for the "wastemen," and which division might remain unaffected by the casualty in the one—like a vessel constructed for the waters *in separate compartments*; one of which becoming *bilged*, the vessel does not sink, *but safety is to be found in another part of the ship*. I must now desist from further arguments, in consideration of your space; otherwise, your Journal might be filled with equally sound reasoning.

Borough-road, Southwark, Oct. 10. Charles Colwell.

Mr. C. COLWELL'S IMPROVEMENTS IN VENTILATION.

Sir,—I have noticed with much satisfaction the communications of Mr. C. Colwell to the *Mining Journal*, and the admirable perseverance with which he follows up the subject of ventilation. It is from such men as Mr. Colwell, who combine scientific knowledge with great power of generalising from whatever facts come under their observation—men whose ideas have not been cramped by too rigid an adherence to the ordinary routine of practice—that the age has to look for whatever improvements, or inventions, are yet to be effected in the application of science to its great end—the ultimate benefit of mankind.

It is indeed strange, though highly corroborative of what we have now advanced, that the two greatest discoveries in the ventilation of mines have been made by men who had no previous practical experience to guide their researches. In the course of a casual visit to the north of England, Sir Humphrey Davy produced the safety-lamp, and Mr. C. Colwell has produced his system of "artificial swilleys;" and I do not think it is going too far to predicate for the latter an equal utility with the former. The effect of Mr. Colwell's system of ventilation cannot be more graphically described than in his own words. He says—"Thus, instead of foul vapours lodging in the present swilleys, or undulations, in quantities to produce danger, artificial swilleys should be made for them, by which means the air would become purified, *increased in quantity, as I will show*, and the danger removed, as no light ever need approach these cells." Not the least advantage of the system appears to be that it at once does away with the necessity of sinking additional shafts over any property, however large, for the purposes of ventilation alone; for if, by the use of one pair of gas cells, the air is increased in quantity, *it must be increased still more* by the use of two pairs, and so on, *ad infinitum*—the farther the air course is carried, so as to bring into operation a maximum number of gas cells, the more pure will be the air, and the greater the current.

But, however important the invention of Mr. Colwell may be, as regards the ventilation of coal mines, there are so many other economical purposes to which this "entirely new principle" may be applied, in connection with the arts and manufactures, that we lose sight of its philanthropic benefits, and view it chiefly in the broader aspect of a great national good. If the gases generated in mines will detach themselves from the current of air while moving rapidly, and subject continually to eddies and agitation from its devious course and frequent changes of speed underground—and this fact I assume for granted, because no one has been found to dispute Mr. Colwell's assertion—it then follows that the same law must hold good aboveground, where the causes which tend to produce a mixture are much less powerful in their operation. Now, I find it stated by Liebig, that the average quantity of carbonic acid gas given out in respiration alone, by a man in ordinary health, amounts to 50·9 ounces daily; horses, cows, and other warm-blooded animals, yield also large quantities; in addition to which an enormous supply is continually present in the atmosphere, as the product of combustion. In the country, or where vegetation is luxuriant and abundant, we can imagine how this carbonic acid gas is disposed of, and by what means it makes its constant round of change in accordance with Nature's laws. But, in large and crowded towns—London for instance—where there is no such vegetation to absorb it, and the current of air operating to carry it off does not exceed in force that which is generally maintained in coal mines, it is evident that, according to the law discovered by Mr. Colwell, its greater specific gravity must cause it to sink at once, and form a substratum of pure gas, distinct from the superincumbent atmosphere.

Here, then, we have an unbounded supply of a valuable chemical ingredient, which may be turned to effect in the operation of bleaching, dyeing, and various other branches of manufacture. As one of the advantages to be immediately derived, I would propose that cellars, or excavations, be made in the ground, which cellars will be identical with Mr. Colwell's "umbrella-shaped cavities," below the level of the "thill," or floor, and thus become reservoirs for the reception of the gas. From these cellars a system of pipes, with stop cocks, similar to gas fittings, might connect the gas with a force pump above, which force pump might be applied, as at present, to the manufacture of soda-water and lemonade, without any of the expense and trouble attendant on the production of carbonic acid from sulphuric acid and carbonate of lime, according to the usual method.

Nor must the advantages to be derived by the miner, distinct from the improvement in ventilation, and total removal of all danger from explosion, be lost sight of. It has frequently been made a subject of regret, that the workmen underground are unusually addicted to intemperance—an excess which, of course, entails upon them all its attendant evils. I would propose also that the carbonic acid, generated or given out by respiration in the workings, and conveyed from the "artificial swilley" by the lower pipe in Mr. Colwell's system, should be turned to account in the production of a healthy, refreshing, and not intoxicating, beverage, for the use of the workmen while pursuing their daily toil. At a very small expense, a soda-water forcing pump might be erected in any convenient part of the mine, in connection with one of the pipes; and every man, by the exertion of a few minutes in turning the fly-wheel, would be able to procure for himself an invigorating draught. Nor would the carburetted hydrogen, which, by its lighter specific gravity, "rides on the top" of the atmospheric current, and is collected in the upper swilley, or umbrella-shaped cavity, be less useful in its application. By carrying the pipes down the sides of the boardways or headings, in contact with the atmospheric part of the current, and fitting them with gas burners in the usual way, the whole mine might be effectually lighted up. It will be at once apparent that this would effect an enormous saving of expense, both to the workmen and the coal-owners. Any surplus gas above the quantity so consumed, might be collected into a gasometer on the surface, and, in many instances, be applied to the lighting of some adjacent town.

I cannot too strongly censure the conduct of those of your correspondents, who, instead of encouraging Mr. Colwell to proceed in his career of discovery, have attempted to impugn his motives, and by a calumnious opposition, to frustrate his honest endeavours to arrive at something good. I rejoice, however, to see that he is a man of spirit, and an Englishman, who is neither to be persuaded or forced into silence, so long as he has anything to say; and I venture to predict that he will yet attain a prominent place among those worthies who have gained notoriety by the original and peculiar character of their inventive powers.—J. R.: *October* 10.

A FEW OBSERVATIONS ON FIRE-DAMP AND SAFETY-LAMPS.

Sir,—I desire to apologise to yourself, and your readers, for interfering in a matter which has already been handled with so much skill and such good results by such men as Davy, Stephenson, and Clanny. If they had exhausted the subject, assuredly then there would have been no room for my interference; but so long as the object of all three (viz.: the prevention of colliery explosions) is unattained, surely there is room for other labourers in the cause to appear.

From my own investigations, I am compelled to conclude that no plan for ventilating, at present in operation, is sufficient to render collieries of any magnitude pure enough to admit of the use of naked candles. Small coal-pits can be purified, and large collieries may be made purer, and less dangerous; but, in my judgment, safety in pits can only be insured by using safety-lamps, under proper regulations. Does it not appear impossible to every sensible man, that a coal-work extending under an area of many miles, and composed of numerous narrow winding passages and galleries, should be freed of all dangerous gases, and have the air contained in it made as pure as the atmosphere, by any apparatus fixed in two or three of the shafts? The only possible means of purifying coal-pits is by sinking sufficient shafts, which would draw up the impure gas without any other apparatus; but as this plan involves great expense, it never will be carried out. None of the present plans can possibly render a fiery or gaseous colliery safe, excepting, of course, when coal is got by open works. In all well-regulated pits they depend for safety alone upon safety-lamps, and I am certain this is the only remedy. The universal and proper use of such lamps would have prevented all former explosions, and will alone prevent them in future.

With these convictions, I endeavoured to devise lamps that should be free from certain objections made against all previous ones. They had been either too complicated, or too expensive. I should not now trumpet forth my own praises, by saying that I have succeeded, were it not my object to benefit others rather than myself. Several varieties of lamps I have designed to suit different purposes, one of which is admitted to be the cheapest and most convenient colliery lamp ever invented, and quite safe; and the others (though, of course, dearer) afford more light than any other before existing. I have the testimony of coalmasters and scientific gentlemen throughout the kingdom, to confirm my assertions, and on that account, as well as when it is considered that I do not personally profit by the invention, having thrown open the manufacture, sale, and use to all, and that my sole object is to render the use of safety-lamps universal, in order to preserve the poor collier from being blown to atoms, I do hope my remarks will not be considered intrusive. Surely there is no one hardhearted enough to wish explosions still to go on; certainly, then, I should hope there is no one who will not, if he can, strive to prevent them. I should also hope that masters will take all possible precautions to insure the safety of their men, and that the miners will take all possible care not to endanger one another. Parties in any rank, or position, guilty of wilful neglect, should be punished by law, and if doing wrong through ignorance, should be instructed and warned. It is of no material consequence what sort of lamp be used if it be safe, but, no doubt, the colliers will prefer the most convenient, and for this purpose I recommend the trial of various ones.

Perhaps a few words on the nature of fire-damp may not be out of place. It is a subtle, invisible, explosive gas, generated in most beds of coal by the union and mutual action of coal and water on each other, whence it is named carburetted hydrogen. It is not perceived in dry beds, because coal cannot of itself dissolve into gas; but by the action of either fire or water. In some few favoured pits it never is formed; and these evidently cannot be the scene of explosions; but in this country, the majority of pits are infested with this plague, and some to a fearful extent. Now, wherever this insidious enemy comes in contact with flame, whether that of a lucifer match, or that of a large fire, it ignites and explodes with irresistible force, greater than that of gunpowder. As with gunpowder, the more there is, and the closer it is confined, the greater will be the shock; so it is with this gas. If a small quantity in any part of a pit catch fire, it will instantaneously run through all the stalls where there is any gas, till it finds a vent, just like a train of gunpowder. The danger of working with open lights in a pit subject to irruption of this terrible gas, must be apparent to all. In such pits there can be no real safety, unless safety-lamps be used at all times and by all the miners, since this gas explodes instantly, and gives no notice whatever of its appearance till the mischief is done. In a safety-lamp, of good design and proper manufacture, a light may be burned with impunity in the midst of fire-damp, because the wire-gauze, which either partially or entirely envelopes the flame, prevents the gas outside from being fired by the flame inside. The action may be seen by any one who chooses to unscrew the cylinder of my cylinder lamp, and to hold it over a gas-light, so that it may be filled with flame, when none of the flame will be observed to pass through, unless when agitated by wind, which the shade in this lamp is intended to keep off. In ordinary situations, air passes through the wire-gauze; but, when in the midst of fire-damp, the gas itself is burnt, which produces a blue flame; and when in sufficient quantity, and deficient of oxygen, it will not support combustion, and the light is put out; but in no case is there any explosion inside the lamp; the gas is consumed as soon as it enters, and passes out upwards in the state of heated gas. Single gauze-lamps are quite safe, if properly constructed, and preferable to double ones, on account of transmitting more light. John Crane.

Lee Crescent, Birmingham, Oct. 10.

ON THE GENERAL SYSTEM OF ATMOSPHERIC TRACTION.

Sir,—Not being accustomed to take assertion for proof, from whatever quarter it may come, Mr. Baggs will allow me to say, in answer to his last, that I do not yet see the economy of pumping back the air into the reservoir, unless its dimensions be infinitely large, as, in that case, the work done, although not absolutely uniform during each portion of the stroke of the pump, as well as during the whole time of the operation, would differ therefrom in an infinitely small degree. I am quite awake to the economy of power that arises in meeting a uniform, as compared with a variable, resistance, more especially when the steam is used non-expansively; but I am so little gifted with prescience as not yet to perceive the economy of using steam expansively in any case wherein, by its nature, when the pressure on the steam-piston is a maximum, the resistance is a minimum,

and *vice versâ*; neither do I perceive the force of Mr. Baggs's argument in recommendation of the expansion engine, in the case contemplated, because, on the Dalkey line, the power exceeded the resistance as 17 to 1, at the commencement of each stroke, according to his statement; and at the end of each stroke the scale turned in favour of the power in the proportion of only 1½ to 1.

In making this admission, it is to be understood, I do not admit the estimation of 2·25 lbs. as the minimum resistance, or that his mode of estimation is properly applicable to any reciprocating engine without a fly-wheel, as are the Cornish engines. In case of the reservoir being of infinite capacity, it is plain that the work done during each portion of the stroke of the pump would be uniform, and therefore there is a parallel in such case between pumping air and pumping water, excepting as respects their different *vis inertiæ*, in consequence of their different density. It is from this cause that, in pumping water, the expansive principle is economical; whilst the density of air being next to nothing, the same principle, if applied, would be a woeful waste both of capital and fuel.

I have already admitted the practicability of pumping back the air into the reservoir, and am now about to inquire into the economy of such a scheme. As I have neither seen the specification of the patent, nor been furnished with any particulars of what is contemplated, I assume as data, that the distance from station to station is 10 miles; time in passing it, 20 minutes; diameter of tube, 7·5 in.; pressure within, 35 lbs. per square inch., in excess of the atmosphere. The reservoir to be of wrought or plate-iron, in the form of a cylinder, of which the diameter is equal to its length, and its capacity 10 times that of the tube; and also that a bar of wrought-iron, of the same strength as that of the reservoir, being 1 in. square, will safely carry a weight of 8 tons.

The rule by which I estimate the power requisite to pump back the air into the reservoir is as follows:—The area of the base of the cylindrical reservoir in feet, multiplied by the pressure in pounds per foot, multiplied by the hyp. log. of 1·1 + 1 (taken as 1·09529), multiplied by 1-10th the length of the reservoir (taken at 59·08 ft.), and the product divided by 33,000 × 1·1, multiplied by the time in minutes of passing from station to station, equal the horse-power as follows:—

$$\frac{2741{\cdot}39660256 \times 5040 \times 1{\cdot}09529 \times 5{\cdot}908}{33{,}000 \times 1{\cdot}1 \times 20} = 123{\cdot}15 \text{ horses.}$$

The rule by which I estimate the power requisite to pump the atmospheric air directly into the tubes is as follows:—The section of the tube in inches, multiplied by the pressure in pounds per inch, multiplied by the feet which the train moves in one minute, and the product divided by 33,000, equal the horse-power as follows:—

$$\frac{7{\cdot}5^2 \times {\cdot}7854 \times 35 \times 2640}{33{,}000} = 123{\cdot}7 \text{ horses.}$$

The two cases differ nearly half a horse-power, as to which I will not stop to inquire; but if either rule be in error, I have no reason to doubt but Mr. Baggs will detect it. As the cost of the reservoir, at 30*l.* per ton would amount to 8000*l.*, I neither see the economy of what is contemplated by the patentees, nor even that the project is *sensible*. I am also still unenlightened as to the *absurdity* of the parallel in my last between pumping air *back* into the reservoir, and pumping steam *back* into the boiler.

Upper Penton-street, Oct. 9. JOHN CURR.

RAILWAY AXLES AND TIRES.

SIR,—Referring to my letter of May 18th last, addressed to all railway companies in this kingdom, or in the world, and which appears to have been very distasteful to some individuals connected with railways, all of whom, however, had the discretion to suppress their feelings except one, and the cap appears to fit this gentleman so tight, as to make him quite outrageous; I would ask, if there was no truth in my statements, why all this fury displayed at my proposing a test? I should think the men who wish to give the railway companies value received for their money, would be glad to have an opportunity of getting fair play, and being relieved from forcing a trade by practices which are a disgrace to all commerce. However, I shall pursue my plan with firmness, regardless of the fury or displeasure of any one—viz.: to give to all railway directors the means of ascertaining the quality and value of all iron they have to purchase, without reference to any man's opinion, save those whom they fix upon to inspect the tests. I beg to inform the railway public, that the machinery for testing the strength of axles, and the strength and soundness of the tires, is now ready; and I offer to the public, without any charges for its use, to try any one's make of axles and tires they may think proper. A machine has been designed and is now making by Messrs. Fox, Henderson, and Co., for proving the quality and durability of tires and rails by actual wear and tear, the same as when at work upon a railway, at any speed you like. The name of the designer is, I trust, a sufficient guarantee for its efficiency—in fact, it will be so true a test, that it must prove satisfactory to the most fastidious mind; and, so soon as it is completed, it shall be offered to the public on the same terms as the testing machines above-mentioned.—G. B. THORNEYCROFT: *Wolverhampton, Oct.* 10.

THE BRITANNIA BRIDGE.

SIR,—The admitted datum of calculation of the mechanical value of a horse-power by those who have to sell and those who have to purchase steam-engines, is that adopted by Messrs. Bolton and Watt—viz.: 33,000 lbs. effective, raised 1 ft. high per minute, or 15¼ tons nearly, raised through that space. Now, it appears that the weight of the Britannia Bridge is about 1800 tons. Assume that at each end of the tube the connecting-rods, or chains, weigh 100 tons, making a gross weight of 2000 tons to be raised, that is 1000 tons to be raised by the engine at each end of the tube. In place of two 40-horse engines, which are employed to work enormous hydraulic presses, and the cost of these presses alone to the railway company must be great, if we are to form an estimate of their value from the statement in the papers of the day—viz.: that the cylinder recently cast would weigh 16 to 20 tons, and would be a week in the sand—I contend that the power of two small 6-horse engines, properly applied, one at each end of the tube, would be ample for the purpose of raising the tube without the intervention of these enormous presses; for it appears that the tube is only raised 6 ft. in the 24 hours. The calculation stands thus:—

15¼ tons, raised 1 ft. per minute, equal to 1-horse power.
6-horse engine.

91 tons per minute, raised 1 ft. high by the engine.

It will, therefore, require 11 minutes to raise 1000 tons 1 ft. high, or 66 minutes to raise 1000 tons 6 ft. high; add 4 minutes for the time occupied in overcoming the friction, it makes 1 hour and 10 minutes for the time occupied in raising the tube, which is much more rapidly than what the work can be followed up, or rendered secure from accident, in the event of the lifting apparatus being injured or destroyed. Without going into the question of having the tube to lift at all, and respecting which there is a strong opinion abroad on the subject, I contend further that it ought to have been raised from the bottom, not lifted from the top. An able writer on the subject has suggested the employment of pontoons, which I believe would be a very efficient method. I, however, confine myself to the direct application of mechanical force. A bar of malleable iron, 7 in. square, would do more than support one end, or half the Britannia Bridge; and I hesitate not to say that four powerful screws, or lifting-jacks—each jack wrought by the application of a horse, or men equivalent thereto—would have been an immeasurably more economical and efficient method of raising the bridge, than the means adopted of lifting it by the application of two 40-horse engines, hydraulic presses, &c. For what, after all, is 1000 tons lifted 6 ft. high daily at each side of the bridge, the work being secured as it progresses, probably even to wedging? It is not equivalent to the application of one horse working eight hours per day at each side of the bridge, or barely so; and yet for this there are to be two 40-horse engines. In my experience, I never knew where the mechanical agency was so outrageously great, in proportion to the work to be performed, as at the Britannia Bridge.

Birmingham, Oct. 8. A SHAREHOLDER.

RESCUE OF SIR JOHN FRANKLIN.

SIR,—I have addressed a copy of the following to the First Lord of the Admiralty. Should you think it worthy of notice, perhaps you would give it publicity in your widely circulated paper.—G. SHEPHERD, C.E.

THE RIGHT HON. SIR F. BARING, BART., FIRST LORD OF THE ADMIRALTY.

SIR,—I trust your lordship will excuse the liberty I have taken in addressing you, but in the year 1844 I witnessed an experiment on the Danube river. A mere shell was exploded under the ice, which was nearly 4 ft. in thickess. The effect it produced was terrific; large masses of ice were forced in all directions, or, in other words, rendered the space where the explosion had taken place completely navigable. My object for informing your lordship of this circumstance, is for the rescue of Sir J. Franklin and his companions by the same means. I beg to suggest that two or more ships should be sent out, with suitable cases or charges of gunpowder, or gun-cotton, differing in power, to suit the various thicknesses of the ice; holes could be bored through the ice, the charges inserted, and fired by means of safety-fuses. It is obvious that, from the incompressive state of the water, and the brittle nature of the ice, the above means might be employed in making a road (infinitely better than ice-sawing) for the gallant adventurers to return to their friends. I beg to tender my services to your lordship, should the above means be deemed advisable, to join any expedition for the above purpose. Judging from the above experiment, I have no hesitation in saying that from 10 to 15 miles per day could be effected, and this with trifling amount of labour.

I have the honour to be, your lordship's most obedient servant,

26, *Fleet-street, Oct.* 6. G. SHEPHERD, C.E.

[We have, since the above, received some further remarks from Mr. Shepherd, in reference to this interesting subject, in which he observes, that the means already suggested do not end with the rescue of Sir John Franklin; but will also tend greatly to diminish the difficulties and dangers incidental to an important branch of our commercial community—the whale fishery. Vessels engaged in this trade are often surrounded by immense icebergs, and in danger of being crushed to pieces. When such danger threatens, nothing could be more easily accomplished than to get on the surface, bore two or three holes, insert the prepared charges, and fire them as before described. By this means, the masses of ice would be dashed in pieces, and, consequently, become perfectly harmless to the vessels. The sailors might, before going out, be instructed in boring, charging, and firing, in a few hours, by a practical miner.]

EMPLOYMENT OF WASTE LANDS FOR MINERAL PURPOSES.

SIR,—In your Journal of the 22d Sept. I noticed, in your editorial remarks, an able suggestion, that the hundreds of thousands of acres of Crown lands now laying dormant, a large portion of which was known to be highly mineralised, might be rendered a source of creative capital, by employing the convicted felon in bringing these isolated districts into cultivation. You further remark, "A well-directed system of organisation and management would soon change this now deserted locality into productive corn-fields, thriving plantations, and the whole into a scene of active industry, at the same time inculcating habits of labour to those who have hitherto been accustomed to live on the exertions of others, and the sweat of honest men's brows." I am aware that you particularly alluded to Dartmoor as the locality for a trial. This proposal, so ably broached by yourself at present, has been previously before the public in the reign of Queen Anne. As, in the various articles which have appeared on the subject in the *Mining Journal*, no mention has been made of this, I presume that the fact has escaped your research, and which accidentally coming to my knowledge a few days since, I have thought would be of interest to your numerous readers; it differs from your plan, inasmuch as poor are substituted for felons. It appears that, at the commencement of the reign of Queen Anne, owing to the National Debt, first fastened on England by William of Orange, pauperism in the several parishes had increased to a frightful extent, and that the rate-payers complained (as in the present day) grievously of the intolerable burden the poor's-rates entailed on them. The corporation of the Mineral and Battery Works, chartered in the reign of Queen Elizabeth, were at that period in a very flourishing condition, having a surplus capital, and an almost exclusive monopoly of mining shared between them and two or three other powerful companies. Robert Harley, afterwards Earl of Oxford, at that period swayed the destinies of Great Britain, and to him the company transmitted the following proposal, which, having abbreviated and divested of its legal details, I subjoin:—

The scheme proposes that Queen Anne should give authority and licence to the Mineral and Battery Works to plant and raise timber, wood, and other combustibles, upon any of the waste lands in Great Britain or Ireland, with power to build and erect houses, furnaces, mills, and edifices, and all belonging to them who have dependence on mineral affairs. It states the great advantage that would accrue to these realms by those mineral improvements, such as the *settlement and employment of the poor and army, when disbanded.* After erecting the necessary works and houses, it states that they shall be empowered to let out to each family, containing five persons, fifteen acres of land, and so in proportion, more or less. They shall allow such proportion of land for each respective family, according to the number of persons; houses, with convenient outhouses, were to be built for each family, which were to be furnished with the necessary household goods for the support of the recipients and their children. The occupiers to enjoy them as copyholds, under the Crown and society, renewable every twenty-one years, on a small consideration, to keep them to their duty to her Majesty and a moderate industry. Three-pence out of every shilling earned was to be deducted, until the outlay of stocking was paid; 10s. per annum to be levied as house rent; and 4s. yearly for every acre of land. In order that they might not become burdensome to the parish, in lieu of poor's-rates, 1d. out of every shilling was to be deducted on the pay-day; this to be managed by a treasurer, appointed by the company, and two persons, elected by the miners. The parishes were to be at the charge of transporting them to the colonies, and to give them, on their arrival at the place of destination, 5*l.* each, which was to be delivered into the hands of trustees, to be laid out in household goods for the use of the settlers, and laying in a stock of provisions, until such time as they were able to subsist themselves, and might become useful and serviceable to the public, and live decently, as become Christians. The Mineral and Battery Works to keep stores for clothing, to be sold at the same rate as the nearest market town.

This scheme was to have been brought before the Houses of Parliament by the Minister; but the war with France intervening, all ideas of it were dropped during the life of Queen Anne. In the succeeding reign, it appears that several of the directors of the Mineral and Battery Works were largely involved in the South Sea bubble, and, consequently, all further prosecution on their part was abandoned. I am not prepared to say that a scheme, offering such advantages and comforts to the settlers on the waste lands could be offered at the present day, without a great outlay of capital. The ridding of the parishes of the paupers, at 5*l.* per head, seems to have attracted as little notice from the Marmaduke Magogs of that day as the offer of sending them to Australia at 7*l.* 10s. does at the present from their successors. The proposals, though, perhaps, extremely apposite for the eighteenth century, would require many modifications to make them assimilate with the habits and altered circumstances of the nineteenth. I have not obtruded this on your notice as at all practicable, but merely as a foregone confirmation of the opinions so often strongly expressed in the columns of your able Journal. For my own part, I think the cry is ridiculous, that we are overpopulated, when we have still so much land in the British isles yet uncultivated. PRO BONO PUBLICO.

GURNEY'S HIGH-PRESSURE STEAM-JET FOR SEWAGE VENTILATION.

Some account appeared in the morning papers, a few weeks since, of an explosion of sewer gas in the Friar-street sewer, in consequence of the sewer being connected with the furnace chimney of Messrs. Anderson and Cattley. A most interesting and perfectly successful experiment with the steam-jet of Mr. Goldsworthy Gurney has since been tried, for ascertaining its capabilities, in the yard of these gentlemen, who thus describe the operation and its effects:—

"On Saturday last a communication was made from our yard to the sewer by a stone piping, 12 inches diameter, and a steam jet three-eighths of an inch diameter (about the size of a large goose quill), taken from a small boiler, was, by a proper arrangement of connected cylinders, made to act as an exhausting power, and thus draw the foul air from the sewer. This jet produced a most powerful current, and in five minutes after it was set in action the whole of the pestilential vapour was drawn out, and the flushing men were able to go into the sewer, which, for nearly two years past it had been impossible to enter. At the Blackfriars-road entry, they found most foul and putrid deposit, to the depth of four feet eight inches, exhaling sulphuretted hydrogen, and other poisonous gases in large quantities, samples of which have been taken by Mr. A. Anderson, which he intends, in conjunction with Dr. Ure and Mr. Scanlan, to analyze carefully. This filth is so thick that the shovels stand upright in it, and the men found it so difficult to wade through that they could not proceed further than 200 yards up the sewer. This morning all the man-holes in Friar-street have been opened, and the men have gone into the sewer at every point. It is in the same state of accumulated filth from end to end, with an inclination running towards our factory, originally intended to go to the Thames, through Union-street. We tested the down-cast draft of fresh air at every man-hole, and found it to be of considerable velocity when the jet was on, drawing in rapidly the vapour from smoking paper, and almost instantaneously re-producing flame by the force of the current. At the opening of the large sewer in Blackfriars-road, the draft was so strong as to oblige the workman to surround the light with his hands. The officers of the commission have set men to work to clear out the sewer, and they can remove the whole of the deposit through Blackfriars sewer, instead of drawing it up into the street and carting away. In an experiment made this morning, the action of the jet was stopped for five minutes; the down-cast air also stopped at every opening, when the stench over the man-hole in Blackfriars-road was insupportable; but within 30 seconds after the jet was again put on, the currents were reversed, as if by magical command, and all effluvia to the street ceased. Every one acquainted with the power of the steam-jet, as now applied to the ventilation of coal mines, would expect this result in its application to the ventilation of sewers; but the most interesting and valuable point to the public in this operation is, that it not only draws off all offensive effluvia, but by a simple process decomposes, and, in popular language, destroys it on the spot. The withdrawal of the whole mass of gaseous sewage from Friar-street has neither tainted the air, nor can it be detected at any distance from the apparatus by the most delicate tests. These remarkable results have been effected in a few hours, at a very trifling cost, and it is quite evident that we have now at command the means of effectually and safely purifying the sewers of all London."

IRISH PRODUCE.—The vessel, *Geraldine*, arrived in the river from Tralee, has brought 127 tons weight of slate slabs, forming the cargo; and the ship *Adam*, arrived on the same day from Londonderry, has brought 72 tons weight of muriate of potash, forming her entire cargo.

COAL MARKET, LONDON.

PRICE OF COALS PER TON AT THE CLOSE OF THE MARKET.

MONDAY.—Buddle's West Hartley 16 6—Carr's Hartley 16 6—Charlotte 17—Chester Main 16 6—Davison's West Hartley 16 6—Holywell Main 16 6—North Percy Hartley 15 9—New Tanfield 13 6—Ord's Redheugh 15—Ravensworth West Hartley 15 9—Tanfield Moor 14—Townley 15 6—West Hartley 16 6—Wylam 16—Wall's-End Acorn Close 17 9—Brown's Gas 14 6—Elm Park 17 6—Gibson 17—Gosforth 17 9—Hedley 18—Hilda 17—Hebburn 17 6—Harton 17 9—Heaton 17 6—Killingworth 17 3—Morrison 17 9—Northumberland 16 9—Original Gibson 17 6—Percy 17—Eden Main 18—Lambton Primrose 18—Bell 18—Belmont 18 3—Braddyll 18 9—Hetton 19—Haswell 19 3—Jonassohns 17—Keepier 18—Lambton 18 9—Russell's Hetton 18 9—Stewart's 19—West Keepier 18—Whitwell 17 6—Caradoc 18—Cassop 18 3—Denison 17—Heugh Hall 18—Hartlepool 19—Kelloe 18 3—South Kelloe 17 9—South Hartlepool 18 to 18 3—Thornley 18—West Belmont 17 9—Whitworth 15 9—Adelaide Tees 18 6—Richardson's Tees 17 3—South Durham 17 6—St. Helen's Tees 16 9—Tees 19—Cowpen Hartley 16 6—Derwentwater Hartley 16 6—Graigola Birchgrove 20 6—Nixon's Merthyr and Cardiff 21 6—Sidney's Hartley 16 6.—Ships at market, 229; sold, 182.

WEDNESDAY.—Buddle's West Hartley 16 6—Carr's Hartley 16 6—Charlotte 17—Hartlepool West Hartley 16 6—Hasting's Hartley 16 6—Holywell Main 16 6—North Percy Hartley 15 9—New Tanfield 13 6—Ord's Redheugh 15—Ravensworth West Hartley 15 6 to 16—West Hartley 16 6—Wall's-End Brown's 16 9—Brown's Gas 14 6—Hedley 18—Hilda 17 6—Hotspur 17—Riddell 17 9—Urpeth 14 6—Eden Main 18 3—Bell 18 3—Braddyll 18 9—Hetton 19 3—Haswell 19 3—Jonassohns 17 3—Lumley 17 9—Lambton 19—Plummer 18 9—Russell's Hetton 18 9—Stewart's 19 3—Whitwell 18—Caradoc 18 6—Kelloe 18 6—South Hartlepool 18 3—Whitworth 15 9—Adelaide Tees 18 9—Seymour Tees 18 3—South Durham 17 9—St. Helen's Tees 17—Tees 19—West Tees 17 3—Graigola Birchgrove 20 6—Nixon's Merthyr and Cardiff 21 6—Sidney's Hartley 16 9.—Ships at market, 113; sold, 85.

FRIDAY.—Buddle's West Hartley 16 6—Carr's Hartley 16 6—Chester Main 17 6—Hasting's Hartley 16 6—Holywell Main 16 6—North Percy Hartley 16—Ord's Redheugh 15—Ravensworth's West Hartley 16—Tanfield Moor Bute's 14 6—Walker's Primrose 14 6—West Hartley 16—Wall's End Brown's 17—Brown's Gas 14 6—Clarke 16 9—Clennell 16 9—Gosforth 18 3—Hedley 18 6—Harton 18 3—Heaton 18 6—Hebburn 18—Morrison 18 9—Northumberland 17 6—Peareth 14—Percy 17 6—Urpeth 14 6—Walker 18—Wharncliffe 18 3—Eden Main 19—Lambton Primrose 18 9—Bell 18 9—Belmont 19—Braddyll 19 3—Hetton 19 6—Haswell 19 6—Haselden 18 3—Jonassohn's 17 6—Lumley 18—Lambton 19 3—Plummer 19 3—Russell's Hetton 19 3—Stewart's 19 9—South Hartlepool 18 9—Whitworth 16—Adelaide Tees 19—Richardson's Tees 17 6—Seymour Tees 18 6—South Durham 18—St. Helen's Tees 17 6—Tees 19 3—Garnant Stone 23—West Hartley Netherton 16 6—Nixon's Merthyr 21 6.—Ships, 120; sold, 100.

The following is the delivery of coals, &c., in the port of London, during the month of September:—

	Ships.	Tons.
Newcastle	329	102,476
Sunderland	265	71,302
Stockton, Middlesbrough, &c.	211	50,785
Blyth	32	7,278
Scotch	2	126
Welsh	27	6,996
Yorkshire, &c.	36	2,953
Small coal	7	1,568
Culm	—	—
Cinders	2	178
Total	911	243,656

London: Printed by RICHARD MIDDLETON, and published by HENRY ENGLISH (the proprietors), at their offices, No. 26, FLEET-STREET, where all communications are requested to be addressed. [*October* 13, 1849.